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ABSTRACT

Results from a 1978 Association of Research Libraries (ARL) survey on planning for, and conversion to automated acquisitions systems, and the effects of such systems on library operations and use, organization and staffing, and management information, indicate that 38 of 77 responding libraries had instituted some kind of automated acquisitions. As with circulation systems, most libraries report that automation has helped standardize processes and has resulted in more efficient use of staff, but few libraries report reduced costs for processing as a result of automated acquisitions. The kit comprises: (1) a survey response analysis; (2) planning documents on an integrated approach from Cornell University and for a commercial system from Florida State University; (3) descriptions of system use in a single library from University of South Carolina, a statewide system from Rutgers University, and a commercial system from University of Southern California; and (4) examples of evaluation methods in single libraries from Syracuse University and Virginia Polytechnic Institute and State University, in a multi-library accounting system from University of California at Santa Barbara, and in a statewide system from Notre Dame University. A list of ways whereby automated acquisition systems have met and not met expectations is included in the summary of survey responses. (THC)

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AUTOMATED ACQUISITIONS IN ARL LIBRARIES

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The procedures required to acquire materials--including searching, selection, input of order information, fund accounting, receiving and processing--are highly labor-intensive when handled manually. In addition, research libraries are coping with growing amounts of published information, continuing user demands and acquisitions workloads, and more complex bibliographic and management information needs. Since the early 1960's, some ARL libraries have turned to automation to deal with at least some of these challenges. A recent SPEC survey of ARL member libraries concerned the planning for, the conversion to, and the effects of automated acquisitions systems on library operations and use, organization and staffing, and management information. Of the 77 libraries returning the survey, 36 have instituted some kind of automated acquisitions activities. As with circulation systems (SPEC Kit 43, April 1977), most libraries report that automation has helped standardize processes and has resulted in more efficient use of staff, but few libraries report reduced costs for processing as a result of automated acquisitions.

Most libraries which have automated their acquisitions processes use campus-wide computers and a batch or combination batch-online mode of operation. The majority of the systems handle both books and serials, with several accommodating other types of library materials as well. Of libraries without automated acquisitions, most cite lack of funds as the main prohibitive factor; several libraries are awaiting development of "better" systems, e.g. turn-key systems for purchase or subscription, or an integrated system from a commercial firm, OCLC, or Ballots.

PLANNING AND CONVERSION. Whereas a commercial system offers a changeover to automation without extensive use of staff time and development of library expertise, an in-house system, which offers tailored design and library control over future refinements, was most often chosen by responding libraries. The planning processes included examining ongoing manual operations, determining the goals for automated processes (e.g. maximum time to process an order, how far the system should track the ordered item), and detailing costs and staff time required for conversion. A system which can continuously monitor operations from ordering through payment and placement on the shelf, and which is integrated with circulation and/or cataloging systems is the goal of many planners, who are also concerned about the system's flexibility and capability for expansion. According to survey results, most libraries decide to automate because of a need for efficient information handling and improved control and monitoring of acquisitions activities. Few respondants cite a decrease in processing costs as a major incentive for developing automation. Between 1963 and 1970, about one ARL library per year automated some of its acquisitions functions. In 1970, five initiated automation, and every year since then, two to three libraries have taken that step. Five libraries are currently adding automated capabilities to their acquisitions processes.

The average length of time required for conversion is three to six months, with two to three professionals and five to nine non-professionals being trained in an average of two to four weeks per person.

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EFFECTS OF AUTOMATED ACQUISITIONS. The most often reported applications of automation are for order generation, claiming, and recordkeeping (accounting, expenses). Of in-house systems, 12 handle mainly accounting, order status, and receiving functions; eight systems handle all of the acquisitions functions listed in the survey; and five systems deal solely with accounting. With the variety of acquisitions sub-operations, it is difficult to categorize system descriptions in any great detail based upon this survey's results. Some 22 automated acquisitions systems interface with other systems (e.g. cataloging or circulation), and included in this group are all the systems which were reported as managing many or all acquisitions functions. Seventeen systems did not interface with other automated activities. The most often reported result of automated acquisitions in the area of Library Operations and Use is more accurate recordkeeping, a decrease in the number of duplicate orders, and faster order and invoice processing. In the area of Organization and Staffing, the two most common reported effects of automated acquisitions are the reorganization of work units and the increased ability of the present staff to handle larger workloads.

Statistical and financial reports, along with listings of ordered items, are the most often reported management information obtained from automated acquisitions systems. A few libraries report that their systems offer reports on vendor performance or average time per order placed. Libraries with this type of management information point out that its use in planning has helped justify the effectiveness of the system as much as its ability to process more orders in less time. There still seems to be a need, however, for management reports useful for collection development and budget planning, such as cost index information.

In a final general evaluative question, all libraries but one report that their systems are accomplishing what they had expected. At the same time, it seems that automation has not had as much impact upon acquisitions procedures as was predicted in the 1960's. Only a few libraries report having truly integrated, multi-functional systems and there is little evidence that automation has resulted in reduced costs. A main deterrent to truly effective automation of acquisitions is thought to be a lack of developmental capital. A listing of ways automated acquisitions has met and not met expectations and more complete survey responses are available in the accompanying Kit on Automated Acquisitions.

SPEC Kit Documentation. Kit #44 contains 10 documents (95 pp).

- o SPEC Survey response analysis.
- o Two planning documents.
- o Three descriptions of system use.
- o Four evaluation documents.

The SPEC Office files contain many other documents on Automated Acquisitions Systems, and ARL members and SPEC subscribers are able to access these files by phone, letter, or in person.

AUTOMATED ACQUISITIONS
KIT #44 - MAY 1978
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ASSOCIATION OF RESEARCH LIBRARIES

May 1978

OFFICE OF UNIVERSITY LIBRARY MANAGEMENT STUDIES

AUTOMATED ACQUISITIONS IN ARL LIBRARIES
SURVEY RESULTS

GENERAL INFORMATION

Out of 77 responses, 36 libraries have automated at least some part of their acquisitions processes and 41 have not. Five are currently installing a system.

Of the "no" answers, 10 are waiting for better available systems, 16 lack funding to automate, 4 cite no need for a system, and 2 report lack of staff and other personnel for planning.

TYPE OF SYSTEM

5	commercial.
6	in-house computer.
26	campus-wide computer.
3	on-line.
14	batch process.
11	combination of on-line and batch process.
1	other.

SYSTEM USED FOR

9	books.
3	serials.
21	both books and serials.
8	other (all materials, including audiovisual).

WHEN INSTALLED

One per year between 1963 and 1970.
Five in 1971.
Two-three per year since 1971.

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PLANNING FOR AUTOMATED ACQUISITION SYSTEM

REASONS FOR AUTOMATION

1) More efficient handling of information
   #1 - 13
   #2 - 10

2) Improved control and monitoring of acquisitions, claiming, and processing of materials
   #1 - 11
   #2 - 5
   #3 - 9

3) More useful statistics for management information
   #3 - 8
   #4 - 11
   #5 - 7

4) Release of staff time for non-routine tasks
   and
   Decrease in costs of processing for item
   #3 - #6 - 14

Write-in
As #1, 5 responses--better control of funds and budget information
Two responses--better user service

CONVERSION TO AUTOMATED SYSTEM

AMOUNT OF TIME FOR CONVERSION

From 1-60+ months.
3-6 months was most frequent response.

NUMBER OF STAFF INVOLVED IN CONVERSION

Professional	0-20 2-3 most frequent response.
Support staff	1-25 5-9 most frequent response.

TRAINING TIME PER PERSON

From few hours to gradual training over two years.
2-4 weeks most frequent response.

EFFECTS ON ORGANIZATION AND STAFFING

	YES	NO
Reduced #FTE 12.5-6.5 27-26 8-7 17-13	5	14
Reduced # professionals 1.5-.5 2-1	3	16
Changed ratio professional to non-professional 2:6-1:6 1:8.33-1:13 9:1-6:1	5	14
Reduced # support staff 24-23 11-6 15-11	4	15
Resulted in reorganization of work units/changes in reporting relationships	15	3
Transfer of staff members to public services functions.	2	17

Other: Helped present staff cope with larger work loads. (8 comments)

LIBRARY OPERATIONS AND USE

AUTOMATED FUNCTIONS

1)	Order generation	29
2)	Claiming	26
3)	Recordkeeping (accounting, expenses)	26
4)	Status of orders	24
5)	Receiving	21
6)	Location of records during processing	16
7)	Report preparation	11
8)	Bibliographic verification	10
9)	Binding records	5
10)	Vendor selection	6
11)	Serials check-in	4

Other: Vendor statistics, duplicate checking, produce COM fiche, assign endowed funds, subscription renewals, standing order funds, notification slips for requestors.

Does automated acquisition interface with other systems, such as cataloging or circulation? 22 YES 17 NO.

EFFECTS ON LIBRARY OPERATIONS AND USE

25	More accurate record-keeping
17	Decrease in number of accidental duplicate orders
15	Faster order processing
13	Faster invoice processing
13	Reduced time between selection and receipt of item
11	Reduced cost of acquisitions processing
10	Simplified procedures for invoice payment

Other: Accurate information and reports, easy preparation of lists, improved delivery time, more timely and complete information on order status to requestors.

EFFECTS ON MANAGEMENT INFORMATION

WHAT REPORTS ARE AVAILABLE FROM THE SYSTEM

27 Statistical, firancial reports
22 Listings of ordered items
17 Budget allocations
14 Purchase and receipt records
12 Departmental buying habits
9 Average costs of library materials

Other: Average time per order placed; fund and vendor analysis; performance of dealers, selectors, and catalogers; number of orders sent to major vendors.

GENERAL EVALUATION

IS SYSTEM ACCOMPLISHING WHAT LIBRARY HAD EXPECTED?

23 YES 1 NO 8 PARTIALLY

HOW HAS THE SYSTEM MET EXPECTATIONS?

Recording of encumbrances and expenditures. Production of reports.

Financial control.

All areas.

All expectations, including expediting orders and receipts and timely payment of invoices.

Purchase order production, order slips, open order listing.

Generation of orders, claims, cancellations, and fund status reports, open order reports.

Fiscal control, automatic order writing, cancellation and claiming.

Monographic acquisitions.

More efficient processing and improved control of subscription renewals and of standing orders.

Improved control.

Order production, claiming, status reports, production of in-process lists, and simplify searching.

More accurate and timely and detailed financial reporting on expenditures and incumberances.

All.

Preparation of order forms, lists.

Improved control, monitoring of acquisitions, claiming, processing.

More useful management information statistics.

All areas.

Allowed order production to increase.

More efficient handling of routine tasks.

Improved control and monitoring of tasks.

Release of staff time for non-routine tasks.

Control of unitary procurements of book funds. Monitoring of work flow in technical services.

Eliminated need for manual in-process file except for periods when system had reliability problems.

In all sub-functions.

All aspects of ordering, receiving, claims, cancellations, and accouting.

HOW HAS SYSTEM NOT MET EXPECTATIONS

Automatic claiming.

Search strategy needs improving.

Special features promised, but not delivered.

Error correction often complicated, programs leave something to be desired. Have to wait for attention from vendor. System not designed for serials, does not receive issues efficiently.

Batch system requires considerable manual intervention.

Because cataloging and circulation are changing, we need to continually re-evaluate acquisitions.

Serial acquisitions--Have adjusted BATAB to allow for serial processing (orders, invoices, fund information). Not completely satisfactory but does allow for some measure of control.

This very limited system has met limited expectations.

Delay in placement of orders due to lag time at computer center.

Accounting program never worked and was dropped last year.

Costly in terms of staff time.

Needs more staff members than manual system.

IROS doesn't affect all areas of acquisitions, increases in book budget have generated greater number of orders--hard pressed to provide adequate service levels in non-automated sections.

System design contemplated staff reorganization that did not work. Acquisitions model must be totally rewritten and simplified. No intention to abandon automated acquisitions--will be redesigned as integral part of whole.

Useful management statistics.

Not been completely reliable. As method for preventing duplication, it is usually effective but not completely. Required extensive "babysitting" and performs no other acquisitions functions--accounting, claiming, acquisitions lists, management statistics, vendor performance analysis, etc.

Analysis of results from orders, vendor response, and other management aspects of the system.

COST ANALYSIS OF AUTOMATION IN TECHNICAL SERVICES*

by Ryburn M. Ross

Introduction

This paper has several main purposes: (1) to determine the relationship of automation costs of technical services in a large research library in relation to the total library resource allocations; (2) to describe Cornell University Libraries' history of automation efforts and the accompanying cost experiences; (3) to review a specific cost analysis for processing monographs in a large technical services group; (4) to review productivity measurement of library staff involved in processing; and (5) to propose some general management planning information techniques to measure the performance of technical services staff.

The performance of adequate cost analysis and the true determination of costs in technical services has always been a very elusive matter. Although there have been numerous feasibility studies performed on various processing centers and technical processes, few such studies have been followed by thorough cost studies after new automated library systems were installed. In addition, the techniques for performing such studies have varied so widely that comparisons of one study to another are not only impossible but invalid. Perhaps the best that any library can hope for is that it will continually study its own processes and their costs and base management conclusions on this information without attempting to make comparative studies with other libraries.

In 1967, Paul Fasana made the following points concerning the determination of library automation costs: (1) few factual data exist on this topic; (2) library automation is expensive; (3) considerable conjecture centered on the anticipated

*To be published in Proceedings of the 1976 Clinic on Library Applications of Data Processing, April 25--28, 1976; Edited by J. L. Divilbiss, University of Illinois Graduate School of Library Science, Urbana-Champaign, Illinois.

efficiencies and savings once computer-based systems are designed and implemented; (4) cost figures in themselves are meaningless; and (5) need to determine the cost of automated library procedures.[1]

It is somewhat depressing to think that almost a decade has passed with little progress made in this area of library management so vital to a library's total resource allocation. With every passing year, a larger portion of each large research library's budget--which has been hard hit by inflationary forces--is being expended for automation purposes. Initially the concept of implementing automated systems was to lower unit costs particularly in the book processing areas of the library. More recently library managers have justified the installation of automated library systems by citing such factors as improved service to the library patrons and reduced processing times. Today less emphasis is placed on cost reductions by the utilization of computers to perform the clerical tasks in libraries.

Library Resource Allocation

Although there is little hard data on amounts spent by libraries on automation, Brett Butler estimates that "somewhat less than five percent of overall budgets go to automated service costs."[2] He points out too that very few libraries were involved in automation activities ten years ago but now almost every library is involved in some form of automated activity "even if they only buy catalog cards

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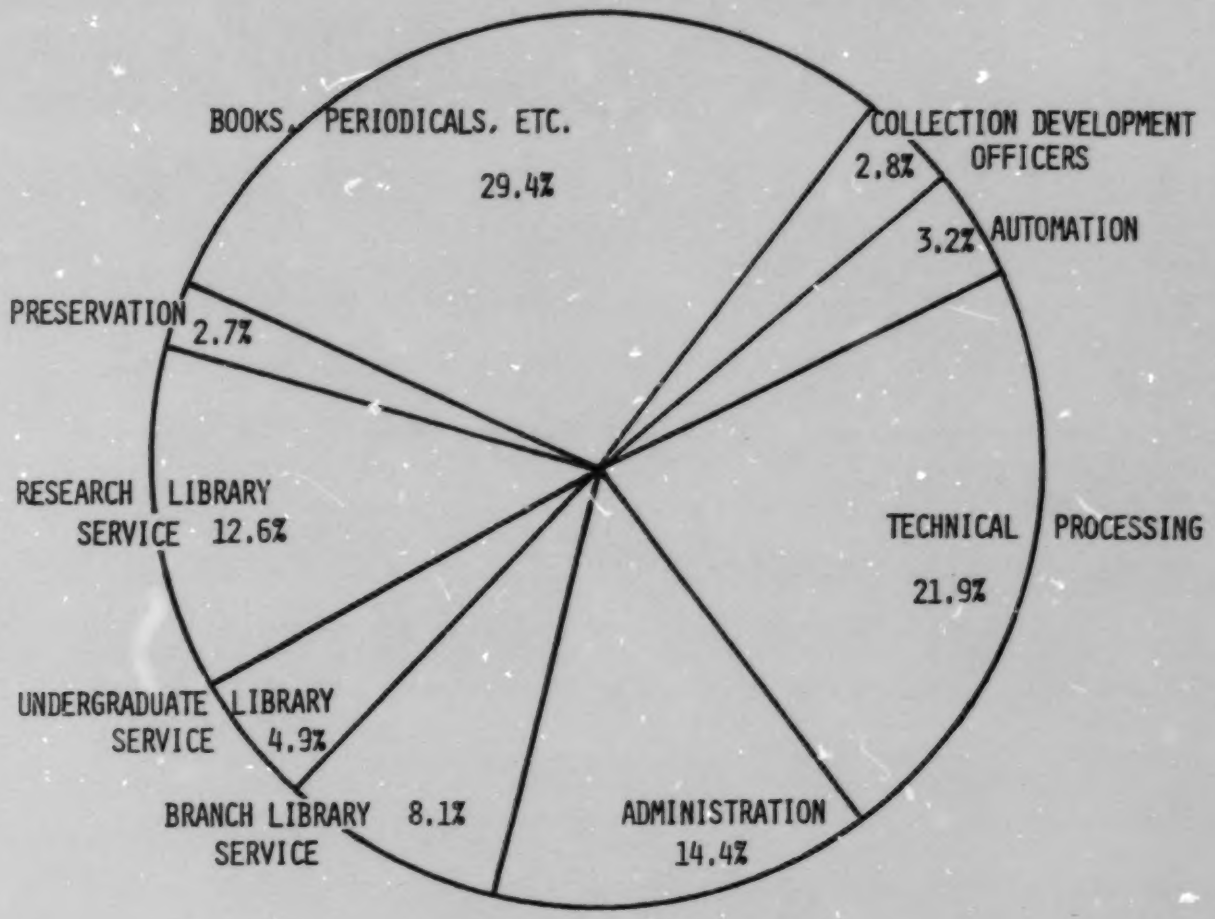
1 Fasana, Paul J. "Determining the Cost of Library Automation." ALA Bulletin. June, 1967. p. 656--661.

2 Butler, Brett. "Use of Automated Services." Bulletin of the American Society for Information Sciences. Vol. 2, No. 3. Sept./Oct., 1975. p. 21--22.

which are generated by computerized systems". He now estimates that between $125--$175 million is now spent annually on various automated systems and activities and that within the next eight years, these same expenditures will rise to $400--$500 million and comprise 8--15 percent of the libraries' budgets. In the future such extensive expenditures will require detailed cost analyses and careful reallocation of library resources. Such resources are already burdened by tremendous pressures to maintain book collections and install new library programs; i.e., Audio-Visual Centers.

The graph used in Figure 1, "Cornell University Libraries, 1974/75 Expenditures by Program", is an excellent method by which to illustrate the various library expenditures by program. One is immediately aware of the fact that libraries are highly labor-intensive organizations with large portions of the budget going to staffing the library, processing materials and collection development. The purchase of books and periodicals and the preservation of the collection make up almost the entire remainder of the budget. The Cornell University Libraries has proceeded carefully and deliberately in utilizing automation techniques and at this time these operations and processes absorb only a total of $138,947 or 3.2 percent of the total endowed budget. It is expected that this amount will gradually increase each year until approximately 8--10 percent is expended in this program area. Automation costs should be related to the total operating resources of a library system and since they are in direct competition with the requirements for staffing and book expenditures, these programs will by necessity

CORNELL UNIVERSITY LIBRARIES



1974/75 EXPENDITURES BY PROGRAM

(ENDOWED DIVISIONS EXCLUDING THE LAW LIBRARY)

BOOKS, PERIODICALS, ETC.	$1,278,076	29.4%
PRESERVATION (BINDING)	$ 118,474	2.7%
RESEARCH LIBRARY SERVICE	$ 547,381	12.6%
UNDERGRADUATE LIBRARY SERVICE	$ 214,122	4.9%
BRANCH LIBRARIES SERVICE	$ 350,217	8.1%
ADMINISTRATION (INCL. GENERAL EXPENSES)	$ 627,716	14.4%
TECHNICAL PROCESSING	$ 954,433	21.9%
AUTOMATION	$ 138,947	3.2%
COLLECTION DEVELOPMENT OFFICERS	$ 121,192	2.8%
TOTAL	$4,350,558	100.0%

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FIGURE 1

CORNELL UNIVERSITY LIBRARIES, 1974/75 EXPENDITURES BY PROGRAM

require substantial justification. In comparing the Cornell University Libraries' program expenditures with another large academic research library such as Stanford University Libraries, one is struck by the similarity in the two libraries' program costs with the exception of automation. Due undoubtedly to the fact that the Stanford BALLOTS System is now operational the percentage of projected cost for automation in the library in 1975/76 was 9.6 percent of the total budget.[3]

Cornell University Libraries Initial Automation Plans

The Cornell University Libraries initially employed in 1965 a systems analyst to study the application of computers and data processing techniques to various library operations. After several months of study and consultation with experts, a five-year library automation program was established. This program called for the automation of three basic library processes: (1) monographic acquisitions; (2) serial records control; and (3) circulation and inventory control. All of these procedures require numerous repetitive clerical tasks which appeared well suited to data processing methods and equipment. As part of this initial study, a mathematical model was constructed which plotted the "Systems Costs Versus Time" (see Figure 2)[4] for the manual systems, improved manual systems and the envisioned automated systems. Every effort was made to incorporate all direct and indirect costs in all three systems, including salary increases to cover the annual inflation factor. In determining the

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[3] Selected Facts, Libraries of Stanford University. 1975/76. p. 2.

[4] Blakely, Robert. Projected Automated Systems Costs for 1) Monographic Acquisitions, 2) Serials Acquisition, 3) Circulation and Inventory Control; FY'66--FY'77. October 1, 1965. (unpublished report)

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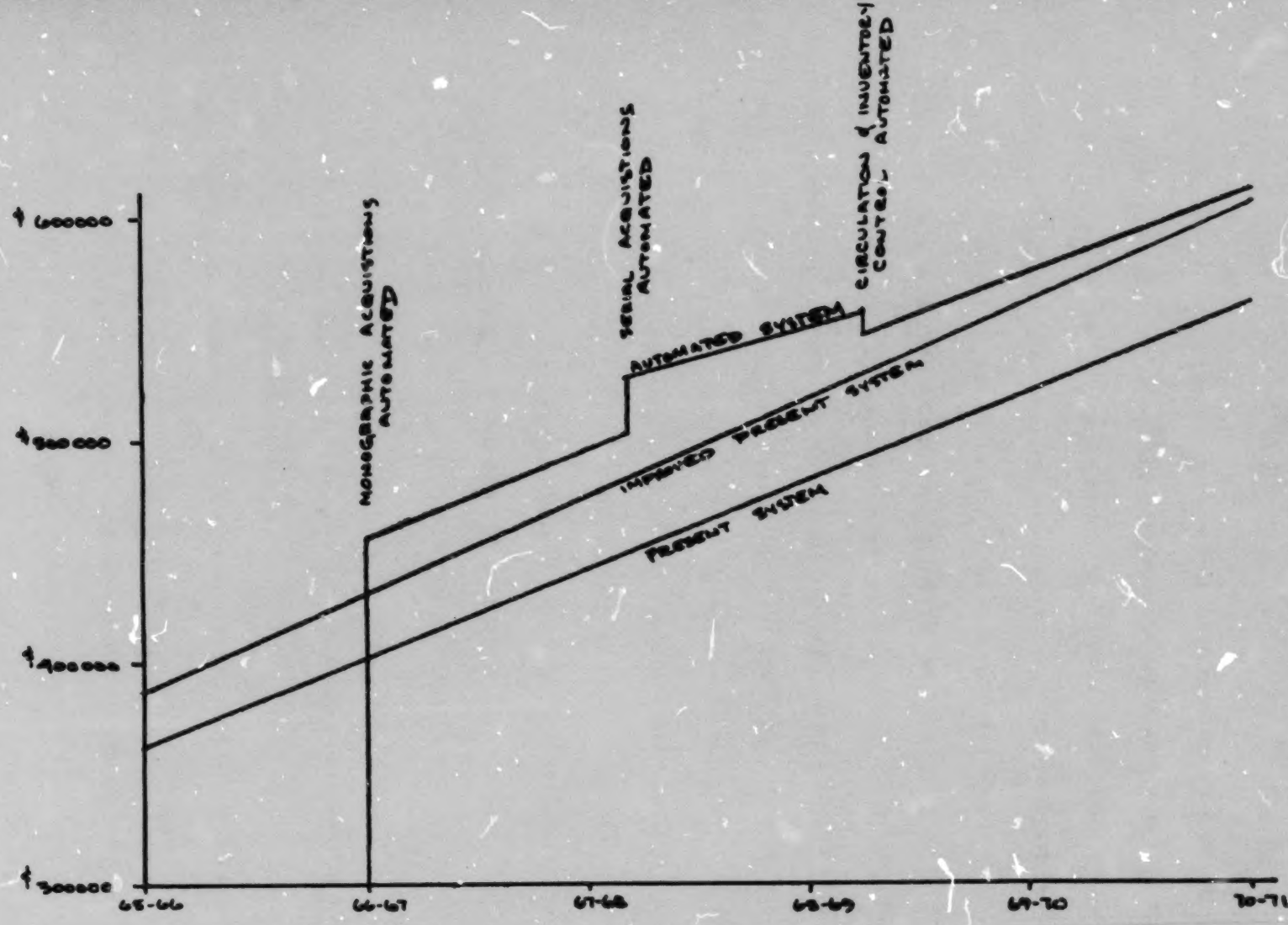

FIGURE 2: SYSTEMS COST VS. TIME

OCTOBER 2, 1965

TOTAL COST
LESS OVERHEAD
FOR:
1. MONOGRAPHIC ACQ
2. SERIAL ACQ
3. CIRCULATION

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costs for the improved manual systems, sufficient clerical labor was added to the existing staff, hopefully to maintain all processes on a current basis. However, in this estimate no attempt was made to add the additional required labor to provide the same level of services expected of the automated systems. Figure 2 illustrates the fact that more than five years elapses before cost recovery is realized in the development and implementation costs.

It was estimated at that time that approximately $250,000 would be needed to develop all three computerized systems. The University administration gave the Libraries a small grant to begin work in 1966 on the first system; later to be called the Automated Acquisitions and In-Process Control System. The acquisitions system became operational in January, 1968, and is a series of computer programs which handle the majority of routine work for the centralized Acquisitions Department. This department orders and receives monographic material for ten separate college libraries on campus. The system performs approximately 65 various operations involved in ordering, receiving, bookkeeping, and generating management information and statistical reports. The receiving system records the in-process status of material, initiates the automatic claiming and cancellation processes and posts charges to over 300 accounts. The system provides an on-order and in-process weekly status report in alpha main entry sequence to be used by searchers and the public services departments. Over 32,000 titles are represented in the main status list. "Mini-Master" lists showing the status of acquisitions for each individual college and departmental library are made available through a computer-sort routine. A unique feature of this system is that monographic series titles are

accommodated both by author/title entry in the main status list and in quarterly listing by series entry for approximately 10,000 standing orders.

A summary of the total development costs, production cost history and detailed production costs for 1974/75 is given in Figure 3. The initial development cost of $87,594 was approximately what the Libraries had expected. However, production costs from the initial feasibility estimate of $12,000 over and above the then current labor costs increased annually until in 1972/73 it totaled $72,760. Each year during the period from 1968/69 to 1972/73 the production cost for this system exceeded its budget despite all efforts by the Libraries and the Office of Computer Services to project budgeted amounts and hold costs down. Contributing factors--though in fact simple but difficult to explain--behind this frustrating rise in charges are outlined as follows: The system was developed on an IBM 360 Model 40 with a price quotation of $50 per cpu hour. The following year a larger computer (IBM 360 Model 65) was installed in the central computer center in support of the University's administrative, academic and research computing needs. A priority system for utilizing the computer was also instituted at that time. In order for the Libraries' acquisitions system to be processed on a weekly schedule, priority eight (the highest priority utilized for administrative production runs) was required. This priority level carried with it a cost of $300 per cpu hour which is a 600 percent increase over the previous rate.

In subsequent years the cost per hour for computer time increased almost annually and even though the library was able to lower the priority rate to six,

production costs continued to increase. Finally in 1973/74 the Office of Computer Services agreed to run portions of this system at a lower priority (five) and budget projections were met. In 1974 the Office of Computer Services installed an IBM 370 Model 168 and, even though this computer ran five times faster than the IBM 360 Model 65 costs remained the same. When the Director of the Office of Computer Services was asked why the production costs for the acquisitions system did not decrease, he responded by writing:

> "...please beware that there are three parameters to consider--charges (costs), service and resources. A true cost saving is one which reduces the use of resources (computing and staff time, supplies, etc.) while maintaining service. A cost saving which reduces charges by use of lower priorities (no saving in computing resources) cannot lead to maintaining services. Your risk, in this case, is possible delays in delivery of output as a tradeoff on the effect on us which is reduced income for the same use of high cost computing resources."

It is obvious that the University's cost increase in hardware and operation software enhancement over this seven-year period did nothing to reduce total library costs--rather they increased dramatically. The lesson to be learned here is that bigger and better computers do not mean lower production costs.

Progress toward achieving the initial goals of the five-year plan was considerably slower than what the Libraries had programmed. This was due

mainly to such factors as the need for extensive and detailed systems analysis, unavailable funds necessary for programmers, lack of trained data processing personnel who were familiar with library processes, delays in obtaining the necessary computer time for testing purposes, frequent computer configuration and operating system changes and the necessity at all times of maintaining normal daily operations.

An analysis of production costs (Figure 3) for the automated acquisition system indicates that approximately 77.5 percent of the total annual costs for this system is paid out for computer time, keypunch machine rentals, computer controller, computer file rental and storage. This leaves only 22.5 percent of the production costs with which to attempt further reductions. It is generally known that batch process systems are notorious paper generators and this fact, coupled with increasing paper costs, means that additional savings can be made if a suitable substitute can be found for the paper output. We have concentrated our most recent efforts in this cost area. A substitute was sought in the form of Computer Output Microfilm (COM) for the paper products. A recent cost comparison of the printed lists versus COM output indicates that approximately $7,500 per year can be saved after the initial investment in microfiche readers. The library has decided to go to a COM output for the status list in the next fiscal year thus taking advantage of the additional saving.

Once the COM system is implemented it is doubtful that anything more will be done to enhance this rather obsolete acquisitions system. A search is already underway for a substitute which will provide lower production costs, be more

CORNELL UNIVERSITY LIBRARIES
CENTRAL TECHNICAL SERVICES

Initial Development Costs

System Design, Programming & Testing	$ 75,000
Supplies (Initial quantities)	3,658
Equipment purchased	500
Manual Labor--Change-over & to run down old OOF	8,436
Total Initial Development Costs	$ 87,594

Production Costs History

	Year	Cost	Priority	Computer Cost/Hr.	Computer
Feasibility Estimate	1967/68	$12,000		$ 50	IBM360/40
Initial Production (6 mo.)	1968/69	$18,036	8	$300	IBM360/65
Full Production	1969/70	$31,000	8	$300	IBM360/65
" "	1970/71	$59,098	6	$375	IBM360/65
" "	1971/72	$66,075	6	$400	IBM360/65
" "	1972/73	$72,760	6	$400	IBM360/65
" "	1973/74	$64,941	5&6	$280 & $400	IBM360/65
" "	1974/75	$66,077	5&6	$280 & $400	IBM370/168

Production Costs 1974/75

		Cost		% of Total Cost
Computers				
370/168	$31,663		47.9%	
360/20	9,545		14.4	
Total		$41,208		62.4%
Forms		14,885		22.5
Keypunch Rental		4,025		6.1
Controller		3,900		5.9
File Rental/Storage		2,059		3.1
Total Production Costs		$66,077		100.0%

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FIGURE 3
Automated Acquisitions and In-Process Control System

flexible in operating, require less in-house maintenance and provide better and more timely products. There are several alternatives to be considered as follows: (1) service from a network such as OCLC; (2) purchase of a commercially available package such as the Baker and Taylor BATAB System; (3) purchase of a "turnkey" minicomputer system complete with software; or (4) purchase of a minicomputer and acquiring the necessary transferrable operating system from another university such as the University of Minnesota Bio-Medical Library or the University of Chicago. These latter systems are complete library data management systems and encompass many additional library processes.

Network Evolvement

In 1970 the University administration decided that due to fiscal constraint some retrenchment in all academic departments was mandatory. A three-year program was announced and it was obvious that additional money to develop in-house library systems would not be forthcoming.

Fortunately, at about the same time the Ohio College Library Center (OCLC) announced that it would accept additional libraries outside of Ohio as members for access to the on-line Cataloging Support Module if they were members of a consortium. The Cornell University Libraries, in conjunction with the other four largest university libraries in central and western New York State had formed such a consortium in 1967 called the Five Associated University Libraries (FAUL). The Board of Directors of this organization recognized the immediate utility of the OCLC Cataloging Support Module and in two meetings (October, 1970, and

January, 1971) the Board considered and approved joining OCLC in a common venture. A feasibility study had been prepared for the Board's consideration within this three-month period by the FAUL Technical Services Committee. The feasibility study[5] indicated that there would be substantial savings in the cataloging processes for all five libraries in utilizing the OCLC on-line cataloging system. Figure 4 shows the estimated current manual costs versus the expected future costs for the FAUL libraries.

In addition to contributing to the FAUL feasibility study, the Cornell University Libraries performed additional cost studies in July 1972 (Figure 4)[6] prior to the installation of the OCLC Model 100 terminals in October, 1973, and again in January, 1975, (Figures 5.1 & 5.2)[7] in order to try to determine exact cataloging and processing times and costs after installation of the terminals. The long time period from July, 1972, to January, 1975, combined with differing techniques and cost elements makes comparison of these three studies difficult and nearly meaningless.

Processing Costs, Staff Productivity and Cost Savings

The analysis of processing costs for social science monographs shown in Figures 5.1 and 5.2 is the result of one of the most comprehensive time and cost

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5 "FAUL/OCLC Feasibility Study". Report to Board of Directors of the Five Associated University Libraries. Dec. 9, 1971. (Unpublished report).

6 "A Time/Cost Study of Processing Books Received Via Unit Orders and Blanket Orders". OCLC Implementation Reports Series, #2. Five Associated University Libraries Newsletter. Vol. 3, No. 4. July, 1972. p. 4--9.

7 Bayunus, Owais. A Cost Analysis of the Automated Systems Control Group, The Acquisitions Department and the Catalog Department of the Central Technical Services; Cornell University Libraries. Masters Project Report. January, 1975. (ERIC Document No. ED102996).

CORNELL UNIVERSITY LIBRARIES
CENTRAL TECHNICAL SERVICES

FEASIBILITY COST ESTIMATES--FAUL LIBRARIES (1971)

	CURRENT COST	FUTURE COST
LIBRARY #1	$ 7.51	$ 4.87
LIBRARY #2	12.98	5.10
CORNELL	8.14	5.33
LIBRARY #4	6.03	5.03
LIBRARY #5	9.43	5.11

COST/TITLE SUMMARY (JULY, 1972)

	UNIT ORDERS	BLANKET ORDERS
ACQUISITIONS	$ .723	$ .953
CATALOGING	1.062	1.728
CARD PRODUCTION	.825	.890
TOTAL LABOR COSTS	$2.610	$3.571
OVERHEAD (20%)	.522	.714
EQUIPMENT (CARD PRODUCTION)	.116	.116
TOTAL COST/TITLE	$3.248	$4.401

FIGURE 4

OCLC CATALOGING MODULE COSTS

CORNELL UNIVERSITY LIBRARIES

JANUARY 1975

I. DIRECT LABOR

A. MEASURED LABOR

SHIPPING ROOM	$0.0202		
AUTOMATED SYSTEMS CONTROL GROUP	0.0892		
ACQUISITIONS DEPARTMENT	0.9639		
CATALOG DEPARTMENT	1.6563		
MARKING & PLATING SECTION	0.0719		
	$2.8015		28.41%

B. COMPENSATING FACTOR FOR WORK EFFICIENCY

MEASURED LABOR		COMPENSATING FACTOR			
$2.8015	x	0.8248	=	$2.3107	23.43%

TOTAL -- DIRECT LABOR	$5.1122	

II. OVERHEAD (21%) AND FRINGE BENEFITS (16%)

DIRECT LABOR		OVERHEAD & FRINGES			
$5.1122	x	0.37	=	$1.8915	19.18%

SUB-TOTAL--DIRECT LABOR, OVERHEAD & FRINGE BENEFITS	$7.0037	

CONTINUED...

FIGURE 5.1

SUMMARY OF PROCESSING COSTS FOR SOCIAL SCIENCES MONOGRAPHS

Sub-Total--Direct Labor, Overhead & Fringe Benefits		$7.0037	
III. Materials and Equipment			
Acquisitions Dept.			
(Xerox rental, Xerox paper, forms)	$0.0208		
Automated Systems Control Group			
(3-IBM 129's, 1-IBM 059)	0.0751		
Marking & Plating Section			
(Labels and Bookplates)	0.0140		
Total--Materials and Equipment		$0.1099	01.11%
IV. Acquisitions and In-Process Control System			
(computer services)		$1.3027	13.21%
V. Cataloging Support System			
(OCLC)		$1.4439	14.64%
TOTAL COST OF PROCESSING A MONOGRAPH (EXCLUDING BINDING)		$9.8602	

FIGURE 5.2

Summary of Processing Costs for Social Sciences Monographs (continued)

studies ever completed for a large central technical services operation. An attempt was made to cover all direct and indirect labor costs including benefits, overhead, major supply items and a compensation factor for work efficiency for all staff members included in the study. Also included is a prorated unit cost for both the Automated Acquisitions and In-Process Control System and the OCLC Cataloging Support System. The total cost of $9.86 for processing each monographic title developed in this study is very realistic.

In reviewing this summary analysis, one is immediately aware that the prorated unit costs for the automated systems now absorb approximately 30 percent of all costs and it is in these areas where reductions must be made to further shrink the total processing costs. It would be extremely difficult to reduce the direct labor costs (28.4 percent) overhead and fringe benefits (19.1 percent) since these two cost elements continue to rise with the cost of living, and the compensating factor for work efficiency (23.4 percent) remains somewhat stable in any workforce.

A unique feature of the Bayunus[7] study was the calculation of a compensating factor for work efficiency and the inclusion of this indirect labor cost into the total processing cost figure. The direct labor costs were computed by using productive hours. This was obtained by passing a sample lot of titles through the various work stations in the technical services and the staff recording "time-worked" notations for the entire lot. A work efficiency factor of .8248 requires that a Productive Time Ratio (PTR) for all staff members be computed. PTR is defined as the fraction of each productive salaried hour. At Cornell a full-time staff member is compensated for 2,028 hours each year. An average of 490 hours of the 2,028 is unavailable

for productive labor because of annual leave, personal leave, sick leave, national hollidays, and coffee breaks. This leaves 1,538 hours available for productive labor.

2,028 hrs. - 490 hrs. = 1,538 hrs.

As a result of this study it was learned that the average worker was engaged in productive effort 72.3 percent of the 1,538 available hours.

$$PTR = \frac{\text{Productive Hours}}{\text{Salaried Hours}} = \frac{72.3\% \times 1,538 \text{ hrs.}}{2,028 \text{ hrs.}} = 54.8\%$$

The compensating factor for work efficiency represents the number of non-productive hours for each productive hour. For every 1,000 hours, 548 will be productive.

1,000 hrs. x PTR = 1,000 hrs. x .548 = 548 hrs.

Conversely, for every 1,000 hours, 452 will be non-productive.

1,000 hrs. - 548 hrs. = 452 hrs.

The compensating factor can be computed as follows:

$$\text{Compensating Factor} = \frac{1 - PTR}{PTR} = \frac{1 - .548}{.548} = \frac{.452}{.548} = 0.8248$$

Industry has performed a number of studies on the efficiency of employees in high-volume repetitive office work and determined that it is performed at 50 to 60 percent efficiency.[8] The Productive Time Ratio of 54.8 percent found in this study for a large technical services staff concurs with other such studies.

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8 "Measuring How Office Workers Work", Business Week. November 14, 1970. p. 54--60.

Elaine Walker, Cornell's Catalog Librarian, in a paper delivered at a cataloging workshop[9] held in Toronto, in June, 1975, estimated that the Catalog and Catalog Maintenance Department required seven fewer librarians and paraprofessional positions (after installation of the OCLC Cataloging Support Module), and that two other paraprofessional positions had been downgraded. Three of the released positions were reassigned to other areas of the technical services. The greatest impact on staffing changes came in the catalog maintenance tasks where the staff has been reduced from 19 in 1972/73 to 13 in 1974/75. The entire credit for the staff saving cannot, in itself, be assigned to the implementation of an automated system, rather it is the combined effect of reorganizing whole departments, realignment and reassignment of staff and tasks, new patterns of workflow, new forms and work schedules, stratification of tasks and a careful consideration of requirements of a man-machine environment.

However, it is estimated that this particular automated cataloging system is now saving the Libraries approximately one dollar per title cataloged on the system. Since the Central Technical Services has been cataloging approximately 45,000 new titles annually since October, 1973, on four OCLC Model 100 terminals, it is readily evident that substantial cost benefits have already occurred to the library. In further examination of this data it should be noted that the amount of direct labor for cataloging now accounts for only $1.65 of the total processing cost.

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9 Walker, Elaine. "OCLC in a University Library." Presented to Technical Services Coordinating Group, Joint Cataloguing Workshop of the Canadian Assoc. of College and Univ. Librarians, and the Canadian Library Association. Toronto, 1975. (To be published in their Proceedings.)

Additional minor reduction might be made in this cost area but obviously the total processing cost would not be affected to any great extent.

There is some pessimism, on the part of this writer, about future savings due to the continuing increases in various cost elements such as the OCLC first-time use charge (utilizing an OCLC record for cataloging purposes) communication charges, terminal maintenance charges and, for the first time, the announced increase in catalog card costs for 1976/77. It is the candid opinion of this writer that the OCLC Cataloging Support Module first-time charge is now carrying an inordinate share of the expense for the recently large capital investments in bigger and better computers (Xerox Sigma 9's), systems development and maintenance costs at OCLC. If these cost increases continue beyond the next fiscal year, OCLC will drive many marginally cost beneficial on-line cataloging operations out of the OCLC system.

Computer Terminal and Cataloging Rates

In determining the total processing costs reported above, valuable data was also obtained regarding computer terminal and cataloging rates utilizing the OCLC Cataloging Support Module (Figure 6). These rates were ascertained when the average response time for the OCLC system was nine seconds or better and comparable results could only be forthcoming under the same operational conditions.

Prior to the installation of the OCLC system, the library staff decided that for a large operation such as Cornell's it would probably be more efficient to

CORNELL UNIVERSITY LIBRARIES
CENTRAL TECHNICAL SERVICES

TERMINAL RATES
(MINUTES/TITLE)

SEARCHING (INCLUDING 2 RESEARCHES)		.8
CATALOGING		
AVERAGE		3.96
LC COPY	3.83	
MEMBER COPY	6.18	
INPUTTING		6.05
PROOFREADING		3.05

CATALOGING RATES
(MINUTES/TITLE)

LC COPY	
DESK WORK	9.66
TERMINAL	3.83
	13.49
MEMBER COPY	
DESK WORK	14.75
TERMINAL	6.18
	20.93
ORIGINAL	
DESK WORK	26.26
INPUTTING	6.05
PROOFREADING	3.05
	35.36

FIGURE 6

OCLC CATALOGING SUPPORT MODULE

stratify the various tasks to be accomplished. The operation was broken down into the components of searching, cataloging, inputting and proofreading. Various levels of staff were trained in these operations and scheduled for two-hour shifts on the computer terminals. The searching tasks were assigned to two full-time positions in the Catalog Department and this personnel accomplished all computer searching as well as any manual searching required in the Libraries' Union Catalog or the National Union Catalog. Cataloging and proofreading tasks were assigned to librarians and paraprofessional catalogers and the inputting tasks to typists in the Catalog Maintenance Section. This system has worked extremely well--workflow is smooth and all tasks are usually accomplished on schedule.

The reported searching time of .8 minutes per title includes two researches. At the time of this study, each title was originally searched immediately upon receipt in the Catalog Department. This initial search resulted in locating 65.8 percent of cataloging copy in the data bank. Subsequent researches for remaining titles were made at two four-week intervals; the second search locating 13.3 percent and the third locating 6.1 percent copy. All remaining titles after the eight-week period were sent to the cataloging teams for original cataloging and inputting into the OCLC data bank. The total quantity of cataloging copy located in the OCLC data bank for this social sciences sample lot is substantially higher than for all material cataloged on the OCLC system. In 1974/75 catalog copy (LC MARC and member) was located for 64.7 percent of the 45,642 titles processed on the system. Cornell is currently experiencing a substantial increase in this percentage figure due mainly to increased availability of LC MARC copy for Germanic, Spanish and Portuguese materials as well as additional member copy.

The average cataloging time of 3.96 minutes per title is very similar to that reported in a study of thirty-six Ohio academic libraries which reported an average cataloging time of approximately 4.3 minutes per title.[10] As can be seen from the data in Figure 6, there is a substantial difference in the cataloging rates with LC copy (13.49 minutes), member copy (20.93 minutes), and original (35.36 minutes). It is the opinion of Cornell's cataloging staff that original cataloging takes substantially more time than the supplanted manual system. Cataloging with member copy takes approximately 50 percent longer than cataloging with LC MARC copy due in large part to variation in entries, non-standardized subject heading and incomplete cataloging data. Since increasing amounts of member copy are now available through the OCLC system, it is imperative that excellent standards of cataloging be followed by all member libraries and complete MARC records input into the data bank. In order to bring sub-par records up to MARC standards, it is suggested that data bank records be edited by regionally located libraries.

Management Data Systems

The cost analysis data which has been discussed in this paper is not in itself very useful in making rational planning decisions concerning a large technical services operation. Such data must be supported by and utilized in conjunction with other statistical and organizational information in order for the manager to effectively assess past performance and project future trends in the technical

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[10] OCLC Newsletter. No. 75. p. 18. November, 1974.

services. A combination of outputs, workloads, backlog counts and processing costs are only a sample of the types of data required for this purpose. Such information should be easily compiled and computed from regularly maintained budget and statistical information. For this purpose the following charts have been found most useful: "Technical Services Cost Ratio" (Figure 7); "Cataloging Outputs and Costs" (Figure 8); and the "Analysis of New Volumes and Titles Cataloged" (Figure 9).

The Technical Services Cost Ratio (TSCOR) was developed in the early 1960's by the A.L.A., R.T.S.D. Technical Services Cost Ratio Committee.[11] It is "a ratio made up of the total cost of technical service salaries divided by the amount spent for library material during a given period of time." The result of this calculation is a decimal form for the amount which it costs in staff salaries to spend one dollar for library materials (books, periodicals and binding). This ratio has been computed annually since the Committee issued forms and instructions for computation and Figure 7 records TSCOR for the period 1968/69 to 1974/75 with the exception of 1969/70. The mean professional salaries for each year are also given since this processing cost indicator is certainly susceptible to increases in salaries and the ratio can be expected change upward by this factor.

One slight variation has been made in the Committee's instructions in that, starting in 1970/71, automation acquisition production costs were added into the basic figures on the assumption that such costs should be equated to direct labor

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11 Welsh, Helen M. "Technical Service Costs, Statistics and Standards". Library Resources and Technical Services. Vol. II, No. 4. Fall, 1967. p. 436--442.

CORNELL UNIVERSITY LIBRARIES
CENTRAL TECHNICAL SERVICES

	1973/74	1974/75
Cataloging Positions		
Professional	26.25*	22.50
Paraprofessional	10.00	11.00
Totals	36.25*	33.50*
Salaries		
Professional	$262,358	$278,500
Paraprofessional	65,207	77,835
Totals	$327,565	$356,335
Total Outputs		
New Titles (only)	69,975	70,363
New Titles, Titles Reclass., Titles Recat.	80,975	80,054
New Volumes, Vols. Reclass., Vols. Recat.	120,572	122,274
Cataloging Output Per Cataloger		
New Titles	1930.3	2100.4
New, Reclass., Recat. Titles	2233.8	2389.4
New, Reclass., Recat. Volumes	3326.1	3650.0
Costs		
Per New Title	$4.68	$5.06**
Per Title (new, reclass., recat.)	$4.05	$4.45**
Per Volume (new, reclass., recat.)	$2.71	$2.91**

* Incl. Catalog Librarian, 1/4 Catalog Editor's time, 2.5 Serials Catalogers and their salaries.

** Incl. salary increments given in December, 1974; retroactive to July, 1974.

FIGURE 8: Cataloging Output & Costs

costs. In 1973/74, all OCLC production costs for the cataloging module were also added. The resulting rise and decline in the TSCOR ratio from 1970/71 to date appears to substantiate previously presented production cost data for both automated systems.

As for the utility of this ratio as a measure of a technical services organization's performance, it is believed that a benchmark can be set by the individual libraries in order to judge total achievement. A ratio of less than one dollar for a large research library is a commendable goal. Cornell's ratio is substantially below this level and even though the mean professional salaries were used substantially in the last year, the ratio only changed upward by five points. TSCOR is a useful indicator for managers to be aware of and utilize as a performance measure.

Library management often requests information concerning cataloging output, cataloging costs and total volumes, and titles processed. Figures 8 and 9, are compiled annually for this purpose and since they cover more than one year, comparisons can be made and analyzed. Since the OCLC Catalog Support Module was installed in October, 1973, it is more than interesting to note in Figure 8 that cataloging output per cataloger increased for all three categories: (1) new titles cataloged; (2) new, reclassified and recataloged titles; and (3) new, reclassified and recataloged volumes. This fact is particularly pleasing when one realizes that the cataloging staff had been reduced by almost three Full-Time Equivalent (FTE) catalogers and yet total outputs were up. Cataloging cost per unit increased

CORNELL UNIVERSITY LIBRARIES
CENTRAL TECHNICAL SERVICES

Year	Total Staff (FTE)	New Vols. Cataloged	New Titles Cataloged	New Titles Cataloged Per Man Yr.	New Titles Per Man Yr. % of 540.3
1969/70	142.00	132,389	75,004	528	97.7
1970/71	140.00	127,244	75,541	540	99.9
1971/72	137.82	115,130	69,021	501	92.7
1972/73	131.45	123,307	75,005	571	105.7
1973/74	126.65	111,527	69,975	553	102.4
1974/75	128.25	113,241	70,363	549	101.6

1969/70: New Vols Cataloged/New Titles Cataloged = 132,389/75,004 = 1.765
1974/75: New Vols Cataloged/New Titles Cataloged = 113,241/70,363 = 1.609

FIGURE 9

Analysis of New Volumes and Titles Cataloged

CORNELL UNIVERSITY LIBRARIES

CENTRAL TECHNICAL SERVICES

TECHNICAL SERVICES COST RATIO (TSCOR) IS A RATIO MADE UP OF THE TOTAL COST OF TECHNICAL SERVICES SALARIES DIVIDED BY THE AMOUNT SPENT FOR LIBRARY MATERIALS DURING A GIVEN PERIOD OF TIME. THE FIGURE OBTAINED BY PUTTING THIS RATIO IN DECIMAL FORM IS THE AMOUNT IT COSTS IN STAFF SALARIES TO SPEND ONE DOLLAR FOR LIBRARY MATERIALS.

YEAR	TSCOR	MEAN PROFESSIONAL SALARY
1967/68	.749	$ 8,439
1968/69	.75	$ 8,811
1969/70	N.A.	$ 9,132
1970/71	.89*	
1971/72	.96	$10,158
1972/73	.96	$10,168
1973/74	.75**	$11,276
1974/75	.81	$12,382

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* INCLUDES ACQUISITIONS AND IN-PROCESS CONTROL SYSTEM'S COSTS FOR THE FIRST TIME.

** INCLUDES OCLC CATALOGING MODULE'S COSTS FOR FULL YEAR.

FIGURE 7

TECHNICAL SERVICES COST RATIO

slightly but this was due in most part to higher-than-normal salary increases given in 1974/75. It is obvious that the implementation of the OCLC Cataloging Support Module has been cost beneficial.

Figure 9 attempts to establish a percentage indicator for new titles cataloged per man-year for the entire technical services staff. This analysis is made in order to take into consideration all efforts by the technical services staff in processing new materials. A norm was established by averaging new titles cataloged per man year and the percentage as is shown for the last three years (1972/73 through 1974/75) has exceeded 100 percent of an established norm. The usefulness of this established norm will be watched carefully in the coming years to see what the future effects will be of additional on-line processing modules; the increased availability of cataloging copy from LC MARC and OCLC member libraries, the numerous changes in entry rules and subject headings, and the trend to further standardization of cataloging copy.

Future library planning needs the input of timely and useful management data. Library managers need to make concerted and continuing efforts to define the library's objectives to determine adequate performance measures and norms, and to design and implement Management Information Systems (MIS) in order to accomplish their library's mission in the most cost beneficial manner possible. Such a system would have the greatest impact on management if the data were automatically collected and analyzed as part of the daily library routines. Unfortunately, no such system exists at this time and the future prospects for its development look dim. In the meantime, reliance must be made upon such cost analysis and management data as discussed in this paper.

UPDATED STATISTICS

CORNELL UNIVERSITY LIBRARIES
CENTRAL TECHNICAL SERVICES

UNIT ORDERS, OPERATIONS AND COSTS
AUGUST 1975

Operation Number	Description	Hourly Wage ($)	Time (min.)	Percent	Cost Per Tile ($)
1	Xerox Title II's	3.6399	0.813	40.00	0.0019
2	Searching	4.0578	5.316	100.00	0.3595
3	Type AQ2's	4.0578	2.364	30.00	0.0480
4	Revise & Dealer Assignment	7.2944	0.399	130.00	0.0631
5	Series Searching	3.7544	2.399	37.00	0.0555
6	Edit	4.0578	0.925	100.00	0.0626
7	Put AQ2's into OOF	2.4000	0.444	100.00	0.0178
8	Process Orders	3.5636	0.107	100.00	0.0064
9	Receiving	4.2095	1.502	100.00	0.1054
10	Match AQ2's to Books	2.4000	0.709	100.00	0.0284
11	Revise (Book-in-Hand)	7.2944	1.366	54.00	0.0897
12	Re-Search (Book-in-Hand)	4.0578	10.130	10.00	0.0685
13	Edit	4.0578	0.925	5.00	0.0031
14	Search (Book-in-Hand)	4.0578	8.745	10.00	0.0591
15	Type AQ2's (Book-in-Hand)	4.0578	2.364	0.75	0.0012
16	Revise (Book-in-Hand)	7.2944	1.321	10.00	0.0161
17	Post-Keypunch Processing of Books	3.5636	0.632	100.00	0.0375
		TOTAL COST			$1.0238

11/77

FIGURE 4

CORNELL UNIVERSITY LIBRARIES
CENTRAL TECHNICAL SERVICES

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SUMMARY OF PROCESSING COSTS FOR SOCIAL SCIENCES MONOGRAPHS

		January 1975		August 1977	
I.	DIRECT LABOR				
	A. Measured Labor				
	Shipping Room	$0.0202		$0.0258	
	Automated Systems Control Grp.	$0.0892		$0.1141	
	Acquisitions Department	$0.9639		$1.0210	
	Catalog Department	$1.6563		$1.5784	
	Marking & Plating Section	$0.0719		$0.0819	
		$2.8015	28.41%	$2.8212	27.02%
	B. Compensating Factor for Work Efficiency				
	Measured Labor x Compensating Factor				
	$2.8015 x 0.8248 =	$2.3107	23.43%		
	$2.8212 x 0.8248 =			$2.3269	22.28%
	TOTAL -- DIRECT LABOR	$5.1122		$5.1481	
II.	OVERHEAD & FRINGE BENEFITS				
	Direct Labor x Overhead (21%) & Fringes (16%)				
	$5.1122 x 0.37 =	$1.8915	19.18%		
	Direct Labor x Overhead (21%) & Fringes (18%)				
	$5.1481 x 0.39 =			$2.0078	19.23%
	TOTAL--DIRECT LABOR, OVERHEAD & FRINGE BENEFITS	$7.0037		$7.1559	

FIGURE 5 (pg. 1)

	January 1975		August 1977	
Total--Direct Labor, Overhead & Fringe Benefits	$7.0037		$7.1559	
III. MATERIALS & EQUIPMENT				
Acquisitions Dept.				
(Xerox rental, Xerox paper, forms)	$0.0208		$0.0208	
(Microfiche Reader Service)			$0.0165	
Automated Systems Control Grp.				
(3-IBM 129's, 1-IBM 059)	$0.0751			
(3-IBM 129's)			$0.1155	
Marking & Plating Section				
(Labels & Bookplates)	$0.0140		$0.0175	
TOTAL -- MATERIALS & EQUIPMENT	$0.1099	01.11%	$0.1703	01.63%
IV. ACQUISITIONS & IN-PROCESS CONTROL SYSTEM				
(Computer Services	$1.3027	13.21%	$1.0730	10.27%
V. CATALOGING SUPPORT SYSTEM				
(OCLC)	$1.4439	14.64%	$2.0404	19.54%
TOTAL COST OF PROCESSING A MONOGRAPH (Excluding Binding)	$9.8602		$10.4396	

PERCENTAGE INCREASE

COST OF PROCESSING A MONOGRAPH	5.9%
CONSUMER PRICE INDEX	27.2%

11/77

FIGURE 5 (pg. 2)

CORNELL UNIVERSITY LIBRARIES
CENTRAL TECHNICAL SERVICES

AUTOMATED ACQUISITIONS AND IN-PROCESS CONTROL SYSTEM

INITIAL DEVELOPMENT COSTS

System Design, Programming & Testing	$75,000
Supplies (initial quantities)	$ 3,658
Equipment Purchased	$ 500
Manual Labor--Change-over & to run down old OOF	$ 8,436
TOTAL--INITIAL DEVELOPMENT COSTS	$87,594

PRODUCTION COSTS HISTORY

	Year	Cost	Priority	Computer Cost/Hour	Computer
Feasibility Estimate	1967/68	$12,000		$ 50	IBM360/40
Initial Production (6 mo.)	1968/69	$18,036	8	$300	IBM360/65
Full Production	1969/70	$31,000	8	$300	IBM360/65
" "	1970/71	$59,098	6	$375	IBM360/65
" "	1971/72	$66,075	6	$400	IBM360/65
" "	1972/73	$72,760	6	$400	IBM360/65
" "	1973/74	$64,941	5&6	$280 & $400	IBM360/65
" "	1974/75	$66,077	5&6	$280 & $400	IBM370/168
" "	1975/76*	$61,942	5&6	$280 & $400	IBM370/168
" "	1976/77	$55,310	5&6	$280 & $400	IBM370/168

PRODUCTION COSTS

	1976/77		1974/75	
	Cost	% of Total Cost	Cost	% of Total Cost
Computers				
370/168	$23,207	42.0%	$31,663	47.9%
360/20	$ 5,389	9.7%	$ 9,545	14.4%
Total -- Computers	$28,596	51.7%	$41,208	62.4%
Forms	$ 8,945	16.2%	$14,885	22.5%
Keypunch Rental	$ 6,337	11.5%	$ 4,025	6.1%
Controller	$ 3,914	7.1%	$ 3,900	5.9%
File Rental/Storage	$ 3,287	5.9%	$ 2,059	3.1%
Microfiche	$ 4,231	7.6%	$--	--
TOTAL--PRODUCTION COSTS	$55,310	100.0%	$66,077	100.0%

* Not included is approximately $6,000 (one-time cost for 1 automatic and 17 manual microfiche readers).

11/14/77

FIGURE 6

Office of the University Comptroller

THE FLORIDA STATE UNIVERSITY
Tallahassee, Florida 32306

May 25, 1976

FLORIDA STATE MAY 1976
SELECTED PLANNING DOCUMENTS

M E M O R A N D U M

TO: Mr. Perry Lewis

FROM: Bill Dondy

SUBJECT: Library Automated Acquisition System (BATAB)

On 5 May 1976, I attended a sales presentation given by a representative of Baker & Taylor, outlining the automated acquisition system their company markets for libraries. Also in attendance were Mr. Fred Jones, Ms. Mabel Stafford, Ms. Carolyn Taylor and two other members of the Library Staff. Mr. Jim Melton attended, representing A.C.S.

The presentation was very interesting, and given in an informative and professional manner. However, it is always best to remember that the software system being presented is nothing but a series of programs which will or will not perform as desired. Following are several points which I feel should be considered when implementing any automated system (purchased or F.S.U. written):

1) Will the system provide the primary user with the data required to perform and monitor their mission?

2) Are the costs (initial and on-going) prohibitive to the degree that the expense outweighs the advantages (point of diminishing returns)?

3) Each new system requires additional support by the Financial System Section. Will the additional support degrade the support given to other areas to a degree unacceptable to the University?

4) In the case of a purchased system, what support will be provided by the vendor:
   a. Prior to installation in the form of user training?
   b. During system installation and initiatization?
   c. If during the course of normal operation, errors are found?
   d. When new and improved versions of the system are released?

Point number one (1) above can best be answered by the Library Staff after analysis of the reports generated by the new system, their

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frequency and what input is required to produce the reports. At this point, it appears that the Library has no reservations concerning the ability of the proposed system to meet their needs. My suggestion here would be that the Library send a qualified team to the site of a present user of the new system in order to visually evaluate the new system.

Point number two (2). The question of cost cannot be answered until all the actions necessary to implement the new system are known and can be analized. We do know that the new system will require computer run time and support from A.C.S. and this section which is not being expended presently. An estimate may be made by comparing the new system to an existing comparable system. The estimate should also be tempered based on the experiences we have gained in the past.

Point number three (3). No matter how much aid we receive from Baker & Taylor in this regard, this section will eventually be responsible for the day-to-day support required by any computerized system. The resources required of this section by this new system is not known at this time. However, I would feel safe in estimating 25% of a Programmer II position would not be unreasonable. The effect upon other systems would necessarily degrade if no additional resources are acquired. The degree of loss would be directly proportional to the degree of support required by the new system.

Point number four (4). It is my understanding that the standard Baker & Taylor package includes:

a) Training of both computer and library personnel.

b) Tailoring to each institution's needs, de-bugging and initial runs.

c) Follow-up, 24-hour telephone help.

d) Installation of any upgrading made to the programs.

In summary, it appears that the Library is satisfied that the system is what they need; user references are given by the Vendor, the four points mentioned above have been addressed affirmatively by the Vendor and I have heard no discouraging words from A.C.S. It would seem that the major factor would be this section's ability to afford the necessary support (of whatever magnitude) with our effective resources steadily shrinking.

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THE EVALUATION OF AN AUTOMATED ACQUISITIONS ACCOUNTING SYSTEM--BATAB

by Joy J. Cornwell

A Research Paper Presented
In Partial Fulfillment
of the Requirements for the Degree
Master of Arts

Department of Library Science
University of Missouri-Columbia
May, 1976

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SUMMARY

Questionnaires were sent to 41 libraries who were using BATAB as of September, 1975. Twenty (20) of these were academic libraries, 14 were public libraries, 4 were state libraries, and 3 were school libraries. The questionnaires were returned by 17 academic libraries, 12 public libraries, 2 state libraries, and 2 school libraries.

Most libraries using BATAB seemed quite well satisfied with the system. Sixty-one per cent (61%) stated that, in their opinion, BATAB is generally a good system; 30% said that, with some modifications, BATAB is a workable system; 6% felt that BATAB needed drastic changes before it would suit their needs; and only 3% said that BATAB is not a satisfactory system.

One library has dropped BATAB because they felt it was too cumbersome for their small staff and that the system had a number of features they didn't need. Another library said they were considering dropping the system because BATAB is only being used for orders placed with Baker and Taylor. Still another library mentioned that since they were the first to use BATAB on a system level they had an unusual amount of problems in the first six months of use. However, the system is now running quite smoothly for them.

Most of the libraries using BATAB have IBM computers. One of the libraries utilizing an NCR computer said there was a problem with the reprogramming that had been done for another library using an NCR computer. Still another library stated that the conversion of the program to be used on their Burroughs 3500 had not been smooth. Other computers used were Honeywell and CDC.

Sixty-one per cent (61%) of the libraries who returned their questionnaires indicated that they would prefer an on-line system, while 27% said they would not. The other 12% stated that it would depend on many factors, such as cost-effectiveness and interface with other library sub-systems.

All of the libraries said they shared the computer with numerous agencies in city, county, or state government or with the rest of the college or university or school data service. Seventy-three per cent (73%) added that various departments in their library also share the computer. However, only 27% said that sharing the computer inconvenienced them or interfered with the efficiency of their acquisitions department. Several libraries did indicate that the library had the lowest use priority or that the run time they were scheduled for was around 3:00 A.M. One library said that sharing the computer was only a problem at certain times of the year, such as the end of the fiscal year or motor vehicle license renewal each June.

Fifteen (15) libraries said that all parts of BATAB were functional at the time it was put into operation, while 18 said they were not. One said the statistical module was deferred several months, while another indicated that their problem was the reprogramming. Still another stated that some parts of BATAB are still not functional, even though they have been with the system for 29 months.

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Through BATAB 23 libraries were able to eliminate duplication of effort and improve on the previous system. Several of those who had not been able to do this yet expressed hope that this would be possible in the near future when the system was fully operational.

Eight (8) libraries said they had noticed a marked increase in the amount of new materials acquired since BATAB was installed. For 13 libraries the rate of acquisition remained about the same. One of the 13 commented that it was the same because of limits imposed by the budget. The other 12 libraries stated that there were other factors involved which did not permit a valid evaluation of the rate of acquisition. Some of these factors were: an increase in budget, a decrease in budget, new libraries added to the processing service, the opening of a new campus, and the introduction of notification slips.

The delay between ordering cycles caused no difficulties for 23 libraries, while 10 stated that it did. One problem with a scheduled run time is that, if the cycle does not run for some reason, the library must wait until the next run.

Four libraries specifically mentioned that they had problems making changes in BATAB. One library said that the solution to one problem seemed to create another. Another stated that they feel the BATAB program is poorly documented. They said, "This is a serious handicap, both in trying to get the bugs out and in attempting to make local improvements in the system." The BATAB personnel seem to be aware of the problem and are reportedly working on the revision of both BATAB manuals.

Most of the other problems libraries encountered seemed to involve factors outside of the BATAB program itself.

Among the suggestions for improvement of the system were: a partial book history printout; the inclusion of the agency on the book history report; and the addition of items to the book order input form, such as requestor, department, person approved by, date submitted, date order received, searching information, serial, and ISBN (International Standard Book Number).

SUGGESTIONS FOR IMPLEMENTATION

BATAB is gradually being proven a successful automated acquisitions accounting system. However, there are certain things a library should consider before they install this system or any other automated system in their library.

First, does the system fit the needs of your library? Is your library too small or do you have too small a staff to make the best use of the system? Does the system do more things than you really need?

Do you currently have capable data processing personnel? Would you be willing to hire someone in this capacity? Do any of your library staff have computer training? Communication with BATAB personnel would probably improve greatly if your library

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had such personnel.

Would the installation of BATAB require a great amount of reprogramming? Does your computer center have personnel capable of doing this reprogramming, or would you have to rely heavily on BATAB personnel to do it? Are the computer center people familiar with library procedures? Can your library afford the added expense that would be associated with the reprogramming?

Have you consulted the staff members who would be affected by such a change, to get their opinions and suggestions? Before BATAB is installed, a staff workshop should be held to explain the use of the various forms and reports. The workshop should be conducted by BATAB personnel and should be quite detailed.

Do not expect the computer to do everything. In fact, it may create some problems, especially if the program has to be changed.

When a library decides to install BATAB, it is very important to do a systems analysis of the present system, plan for conversion to the new system, and allow for future expanded use of the system. Be sure the system will take care of any projected growth in the size of the library or system, or in its use.

Another consideration is the interface with other library sub-systems such as cataloging, circulation, and serials.

After BATAB is installed, the library should continue trying to make the best use of the system. Non-use of a large number of the features of the system would certainly justify a re-evaluation.

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June 30, 1976

MEMORANDUM

TO: Dr. Joe H. Hiett
Vice President for Educational Services

FROM: Charles E. Miller

Attached is a report and various other documents related to a proposed automation of the Library's acquisition systems. BATAB, a commercial system, emerges as the most attractive and economical system. This conclusion reflects the Library's staff decision as well as agreement by campus systems staff and a staff member of UNIFTRAN with whom there has been a discussion of the programs.

The cost of this system requires an initial cash payment to BATAB of $8,000 (a large portion of which it is hoped would be provided the Library as additional expense allocation). The annual cost of $1,500 would be absorbed in the Library expense budget.

This is to request approval and the support of the Vice President's office to negotiate a priority for allocating start up and "de-bugging" time from the University Systems office (which now reports to the Comptroller). Since the Library has worked closely with the Comptroller's office (reference: memorandum dated May 17, 1976 to Mrs. Nellie Gillespie) during this study, the amount of time involved could easily be determined. A target date of January, 1977 would permit six months lead time to schedule the systems expert to be assigned for the implementation of this project.

It is felt that this program, which can be implemented in a brief time span at an expense much lower than our own resources could develop, would result in the speed up of processing new materials which will directly benefit all Library users, a constant demand of both faculty and students. This is a goal to which the Library is committed and one toward which it has been striving for some time.

It is strongly urged that approval be granted for this forward moving proposal and, if approved, that implementation be scheduled for January, 1977.

CEM:pm
Attachments

cc: Mr. Scott Kent, Assistant Vice President
for Administrative Services (Acting Comptroller)

bcc: Mr. J. F. Jones, Mr. Perry Lewis, Mr. Bill Dendy, Mr. Jim Melton

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REPORT OF STUDY
TO PROPOSE
AUTOMATED ACQUISITION SYSTEM

Prepared By

J. F. Jones
Assistant Director
Technical Services

June 28, 1976

Florida State University
Robert Manning Strozier Library
Tallahassee

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AN AUTOMATED ACQUISITIONS SYSTEM

FOR THE F.S U. LIBRARY

The Acquisitions Division of the F.S.U. Library annually buys between 35,000 and 50,000 items of library materials at a cost of between $800,000 and $1,000,000 without the aid of the University Purchasing Department. The Library produces its own purchase orders and accounts for expenditures against allocations to the academic departments and schools and the library divisions. An intricate manual process is necessary. Automation of these processes could yield heightened service to library users and make the internal procedures more authoritative.

Many institutions like F.S.U. have created their own sets of programs for automation of their acquisitions system. Adaptation of a program from one of these institutions, creation of programs at FSU, or lease of a program package are options open to us in obtaining an automated acquisition system. Adaptation of a program from another university is equivalent in systems personnel time to creation of the same programs here. From all indications, the most economical method of putting an automated acquisitions systems into action is lease. The material contained in this report is an attempt to determine the suitability of the library automated acquisitions system BATAB.

In May, 1976 Mr. Melton, Mr. Dendy and members of the library staff attended a presentation by a representative of the Baker & Taylor Company. In a memorandum of May 25th, Mr. Dendy listed the points on which consideration of a leased system should touch. The first was determination of whether the system would perform the Library's and University's needs. The Library has made the following contacts:

Telephone conversations with (1) Jean Graef, University of Kentucky, Lexington;(2) Nancy Lee Boone, University of Missouri, Columbia; (3) Joseph Boykin, University of North Carolina at Charlotte; and (4) Frederick Ruecking Jr., Rice University.
In addition we have obtained a research paper by Joy J.Cornwell entitled, "The Evaluation of An Automated Acquisitions Accounting System - BATAB," written in May 1976.

All the persons contacted by phone work directly with the system except Mr. Boykin, who is the Director of the Library in Charlotte. All are satisfied and all had criticisms to make. Following are points made by each library.

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University of Kentucky at Lexington - They were using an NCR accounting machine for their fund accounting, all other portions being manual. There are 12 branches and 2 types of funds. They attempted to adapt their manual system into BATAB and put in their outstanding orders as well. This caused them to do part of their work on and part off the system. Their computer center had to adjust to be able to read unlabelled tapes. In their opinion both systems should be run concurrently until there is complete satisfaction with the new.

University of Missouri, Columbia - Highly recommend planning in advance. They did. They adapted BATAB in place of a completely automated system, had it working fine in six months time. Their personnel were used to working in a data processing environment. They suggest getting the manuals, thinking about the entire process and the structure of the local organization. The system is good, their computer expenses have dropped, and the public service librarians are pleased with the reports. Baker & Taylor is quite cooperative. The local computer persons are very important; it takes time and skill beyond that provided by the system. 3 minutes computer time, 7 or 8 maximum; wall time about an hour.

University of North Carolina, Charlotte - This was the first computerized system in the library. They were up and running in a very short time, but have their own computer programmer on the library staff who has re-written some of the programs. They use a Burroughs B5500. They make a fiche copy of the book history tape which includes the in-process record. The programs run alright for them and they are reasonably satisfied.

Rice University - Ruecking and another man in the Library both can program and therefore make any changes they wish. Although there have been miscellaneous small snags most of their experience has been good. It is a sound package which does a good job of fund accounting. According to Mr. Ruecking there is no way to get a set of programs like BATAB for as little as the installation fee and no locally written order system in existence is anywhere near as complete. The edit power is "incredible" and the report capacity "fantastic." He suggested line 5 as the place to record series, line 4 for imprint, and line 6 for requestor. Their installation is somwhat unique; they are on-line and have a data-capturing system of their own. Have been going since November 1975.

A copy of the Cornwell study is attached. It is generally favorable. Two questions are raised in it which well merit an answer at this point in the considerations.

(1) Is off-line a satisfactory mode for the FSU Library?
(2) Should the Library have its own computer personnel?

In answer to the second question, the Library does not feel the need of computer personnel on its own staff. Perhaps this need is felt at other libraries because of inability of systems and operations personnel to bring about smoothly operating systems for their libraries. The organization of these services at FSU is satisfactory and the personnel quickly develop the knowledge necessary. The only question is computer and systems personnel time.

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With regard to off-line as a mode of operation: first, there must be printed reports for use of the staff and patrons. Secondly, the time lag between reports (one week during normal times of the year) can easily be dealt with internally by a file of materials submitted, which is checked against the report and disbursed into their usual files upon receipt of this report. It is true that an on-line system would allow updating straight into the data base and that, if there were enough terminals to satisfy both the needs of the Acquisitions staff and the public, instant access to current information would be available. However, the information in the file will require no interaction with the users of the file and it is strongly felt that the printed reports combined with the file of items pending update will be satisfactory.

To summarize, contacts with present users have turned up cautions and suggestions but no discouraging messages. The Library would very much like to begin planning for a January, 1977 installation so that by July 1st 1977 virtually all orders would be on the new system.

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A brief overview of our system follows:

The University of South Carolina Monograph Processing System is designed to provide the basic routine requirements of the Order Department in its ordering, receiving, processing, accounting and statistical functions. In addition, it provides the data base for the circulation system and provides forms for further internal processing by the Cataloging Department.

It consists of a set of programs written in IBM os American National Standard Cobol, version 4. The Hardware presently used is an IBM 370/168.

Simplicity is the key to the system with the various input forms providing the system with specific information. For example, data from the book request form will produce purchase orders, quotation requests, standing order implementation letters, catalog order letters and prepayment letters with a one character code initiating system action.

New Orders placed generate encumbrances in the accounting system. Order receipts and Standing Orders/approval plan receipts create disencumbrance and expenditure records. This means that a weekly updated report of the book budget is available.

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Other input forms are used to enter new data or update the system:

to provide order status information
to provide budget data
to correct information in certain files
to "receive" an item, disencumber and expend funds
to remove an item from MPS and enter it in the data base for the Circulation System.

The reports generated by the system demonstrate the capability of MPS to provide informational reports for library users, such as the New Titles Catalogued List, and the List of New Titles Ordered each month, in addition to the useful profile reports needed by the Order Department personnel for daily work.

Other reports, such as the Supplier Analysis establishes an accurate profile of vendor performance including discount, number of items on order, net cost, orders received, delivery time and other important data.

The system also has an automatic vendor claiming cycle which will claim items not received after a specified period. The length of this cycle is assigned each item when ordered and is the cycle assigned to the vendor when entered in the Supplier File. However, claim generation is not static by vendor as each item may be updated to reflect a unique week cycle if necessary. A status update transaction is used to reset the week cycle for individual records.

The newest part of the system is the Standing Order Module which is designed for the collection of data of materials received automatically on various blanket Order Plans, Standing Orders, etc. Forms are generated for internal processing and the STO Record is updated.

This module also has a claiming cycle which is unique to each record in the STO Record. Non-receipt will cause the system to generate a claim letter stating last item received, and the date of receipt to enable the vendor to investigate the calim.

COM is utilized by MPS and three of the larger files are prepared weekly on fiche.

Although the system was not designed initially to handle serials, we implemented a standing order module which handles continuations, etc., as mentioned above. We are presently developing a serials system which may be a part of this system interfaced in accounting aspects.

Data is collected and processed in the library's data entry unit. The hardware consists of IBM 3742 Dual Data Stations. The time involved

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for data input is that of one and one half FTE or about 56 hours per week.

The major files are the In Process File, Supplier File, and Accounting file. Before the Computer Center went to Virtual Storage, we used one 2319 disc pack and had all of our files stored on it with about ½ of the space still free.

The major products are run once a week, using about five hours wall clock time and about five minutes CPU time for each complete run. We presently run Thursday night and receive output Friday morning.

MPS works quite well providing information needed for efficient operation of an acquisition department with minimum maintenance.

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CAPTAIN History

RUTGERS UNIVERSITY SEPTEMBER 1973

DATE	PROJECT DEVELOPMENT	MANAGEMENT (Organization & Planning)
Fall 1969 thru 1970		Initial planning phase which included Dept. of Higher Education, Rutgers University & N. J. State Colleges
December 1970		Project Bid Specifications Released
February 1971		CAPTAIN Advisory Board Formed
June 1971	IBM Systems Engineers Began Work	
June 1971	IBM Computer Installed at Rutgers Library	
November 1971	First IBM Terminals Installed in Central Library	
Sept. 1971 - Jan. 1972	Rutgers Library Hired Systems Staff	
June-July 1972		Visit to University of Mass. & OCLC to review their organization
July 1, 1972	Began printing all Rutgers Purchase Orders by Computer	
Aug.-Oct. 1972	Terminals Installed at two Rutgers Branch Libraries	
September 1972		Organization Plan Prepared by CAPTAIN Advisory Board
Nov.-Dec. 1972	Improved Order Subsystem (Fund Reports, Invoices, etc.)	
Mar.-April 1973		Obtained Approval for Organization Plan from CAPTAIN Board & Rutgers Board & Board of Higher Education
September 1973	Catalog & Processing Subsystem Began Production Catalog Cards Bookcards Labels Packing Slips	
September 1973	Began Testing Order System at Two State Colleges (Stockton, Paterson)	
September 1973		CAPTAIN Library Services Corporation Formed

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SERVING COLLEGE AND UNIVERSITY LIBRARIES

CAPTAIN

It's no secret that college and university libraries are facing servere problems. There is more information in the world, and the number of documents that must be acquired, circulated, and stored is growing rapidly. There are more students and faculty members to serve. There are more pressing demands for new services and for more responsiveness in present services. And concurrently with these ongoing trends, library budgets have borne the brunt of inflation and of an extraordinary competition for funds.

The New Jersey Department of Higher Education, recognizing the educational necessity of maintaining viable college and university libraries, has taken the initiative to foster realistic solutions to their problems. Three years ago, the concept of a centralized system that would improve service while controlling costs was proposed. Since then, this concept has been implemented for certain library functions as the CAPTAIN system.

This booklet briefly describes the CAPTAIN system as of mid-1973.

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CAPTAIN: WHYS AND WHEREFORES

CAPTAIN was designed as a systems solution to the State's multi-library requirement. It is a computer-aided communications network in which libraries equipped with typewriter-like terminals communicate with a centrally located computer and are assisted with several of their functions. This method of organization enables more effective utilization of resources now and establishes the conditions for significant cost avoidance in the future. At the same time, it allows librarians to use more of their time for direct service to students and faculty.

The functions supported by CAPTAIN, which are briefly described on the following pages, enable each library to make documents available to its users in a more timely fashion, to make more information available to its users, and to handle increased numbers of users and documents with the highest standards of service. In addition, these functions help to build a library holdings data base that will eventually become an information resource in its own right. The catalog records stored by CAPTAIN, for example, contain for each title its location or locations in the network's libraries and form the basis for a member library union list.

The CAPTAIN design produces a high degree of cost effectiveness, assigning tasks to machines that machines can do best and reserving for people what they are uniquely qualified to do. People and machines complement each other's strengths in such a way that every library in the network can achieve its potential as the central intellectual resource on its campus.

According to Virginia Whitney, University Librarian, Rutgers University, "Rutgers University is pleased to participate in developing CAPTAIN to enable library services to improve in the State as well as at Rutgers. The Rutgers librarians and their State College colleagues have planned cooperative projects for some time. CAPTAIN as the nucleus for a network of statewide resources and interlibrary communications is a visible symbol of this joint effort."

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HOW CAPTAIN SUPPORTS MEMBER LIBRARIES

Less Effort Gathering Catalog Information

CAPTAIN saves member libraries significant effort in connection with the gathering and subsequent use of catalog information. This saving is made possible by the use of Library of Congress catalog information, which is received weekly on computer tapes. This information is merged into a master file, searched for entries relevant to the needs of member libraries, and extracted as required, all automatically and without manual processing. In addition, an index to the data in this master file is prepared periodically and made available to member libraries.

Reduced Workload in Order Preparation

Using title, author, and publisher information generated by member libraries and transmitted to the central library through the use of typewriter-like computer terminals, CAPTAIN's acquisitions module places orders and maintains associated invoice information. Sufficient data on vendors and publishers is maintained within the system so that, along with the current and prior years Library of Congress master files, the amount of ordering information that member libraries must transmit to the central library is held to a minimum.

Tighter Control of Funds

Preparation of purchase orders is handled by CAPTAIN, but only after an automatic check is made to determine if the appropriate accounts have sufficient funds and, if so, only after such accounts have been properly encumbered. Cancellations of orders remove such encumberances and free the associated funds. After volumes have been received and verified, the appropriate changes are made to the status of the affected accounts. When ordered materials are overdue, CAPTAIN prepares follow-up letters from pre-stored paragraphs and in-process vendor information.

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Verification of Shipments

Computers can search quickly through large files to find records that satisfy specified criteria or to verify that records satisfying specified criteria are absent. These abilities are exploited in CAPTAIN's receiving operation. If a copy of the purchase order is not included with a shipment, received materials are matched against the in-process file to locate the purchase order number or to determine if the materials had been improperly shipped. After verification and after necessary adjustments and corrections are made, initiation of payment and cataloging procedures is authorized.

Centralized Preparation of Catalog Cards and Related Items

Generation of catalog and circulation cards and spine and back pocket labels is organized so as to maximize the use of information already in the CAPTAIN system and to reduce manual processing to the lowest level. Library of Congress numbers are used to search the current year master file and the master files from prior years to find the data needed for such cards and labels. Where a Library of Congress number exists but the related information has not yet been received, interim cards and labels are generated, and the master file is rechecked two weeks later. Where necessary, of course, catalog information is obtained in the conventional way.

Retention and Sharing of Member Library Contributions

When catalog information is not available from the Library of Congress and is created by a member library, such information is transmitted to the central library for preparation of catalog and circulation cards and spine and back pocket labels. At the same time, this information is retained by the CAPTAIN system for the use of all other members of the library network. It is merged with the Library of Congress information and helps the total resource of the system to grow. Reports using information on file are prepared automatically in desired sequences.

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THE "C" IN CAPTAIN IS FOR "COMPUTER"

At every college and university there are two major information centers that serve as campus wide resources: the library and the computer center. Until recently they have been wholly independent operations.

Development of the CAPTAIN system at the Central Library of Rutgers University demonstrates there is now a growing sphere of mutual interest between the library and the computer center. In addition, the creative approach it takes toward meeting the State's library requirements is likely to have a positive influence on the use of computers in other areas of education.

During the development and testing of CAPTAIN, a card reader, printer, and terminals were used to communicate with the IBM System/360 Model 67 computer at the Rutgers University Computer Center. This communication was and is accomplished via telephone lines, in the same manner that member libraries all over the state communicate with the central computer using computer terminals.

The computer terminals installed at member libraries to communicate with CAPTAIN are IBM 2741 Communication Terminals. One or more of these typewriter-like devices are required at each library, depending on volumes of orders and locally produced catalog information. It is estimated that a single terminal is adequate for a weekly load of 300-400 orders and locally produced catalog information for up to 150 books.

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GETTING STARTED

Coordination of the CAPTAIN system between the central library and the remote libraries, computer center, and the Department of Higher Education is the responsibility of George Carroll, who is located at the Rutgers Library, and who is Director of the CAPTAIN Technical Processing Project. The first step in implementing CAPTAIN on a particular campus is for the head librarian to make contact with him.

George Carroll and the member library jointly work out a training schedule for the library's people, an installation schedule, and a prioritized list of all the procedural items that must be in place before installation and operation can take place. Among these items are: catalog requirements, vendor lists, coding structure, allocation of funds to the CAPTAIN account, etc. Once the plan has been made and all parties have agreed to it, it is put into motion, and periodic meetings are held to ensure that the schedule is being kept and that all questions are satisfactorily resolved.

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Instant Response Order System (IROS) at the University of Southern California

Wayne Gladish, Acting Head, Acquisitions Department
Linda F. Crismond, Assistant University Librarian

The Library's asking budget for 1977-78, prepared in the Fall of 1976, requested an increase almost doubling the materials budget. In order to handle the increased work load, we looked at streamlining the technical services operations and at outside services which might improve our productivity. In the Spring, the final budget was released with a 53.4% increase in the materials allocation.

The increase in the materials budget lead to the decision to test IROS beginning March 1, 1977. IROS was viewed as a way to get books faster and to increase the productivity in preorder searching and order placement. Without it, it was projected that an order backlog would be created because of the increased book budget. IROS is a leased system and does not require any equipment expenditures. It meshes with our manual system in that the end product is a six-part order form which is filed into our regular order files. A description of the system is attached for your information.

STREAMLINING AND REORGANIZATION

In preparation for the test, an analysis was made of the Library's Acquisitions Department. The searching section's routines were streamlined by cutting the number of files searched, by rearranging the sequence of searching, and by shortening the verification process for price and some foreign materials. Files were reorganized so that the multiple order form could be cut from nine to six parts. The processing of non-library book orders was shifted from the Library to the University Bookstore. The receiving section was reorganized so that a student assistant could handle some of the operations. All operations were then monitored so that base line unit time and cost figures could be established. Vendor performance was analysed in terms of speed of delivery, percentage of order filled, and discounts received.

Some additional reorganization in the department was necessary. The searching unit no longer performs bibliographic verification on U.S. trade imprints. This function is now performed in order placement; the terminal operator decides if the title on the screen is the one that the library wants. Supervision requirements have been reduced by the elimination of revision of the searching section. Further, the process of vendor selection has been greatly simplified. These changes plus the general streamlining of internal procedures meant that it was possible to transfer one of the two professional positions to public services.

EASE OF USE

IROS was up and running one and on-half months after the initial discussions were held. At the end of the first day, the operator had sufficient skills to use the system with few questions. A search key is used to get into the file with author, title, keyword, and ISBN access points. In general, our reaction has been that the system is easy to use.

PRODUCTIVITY MEASURES

Gains in productivity are achieved principally through the consolidation of the bibliographic searching and order preparparation functions. Prior to IROS, order preparation averaged 3.75 minutes per order. Unit-times for bibliographic searching showed great variation, with many orders requiring no searching and others requiring as much as half an hour. The average time was nearly five minutes, but this is probably too high for those items likely to be found and/or ordered through IROS. Since the average time per order for IROS is 2.5 minutes, including searching the data base, verification, and order preparation and placement, the productivity gains are significant.

Initially, all orders sent to the Acquisitions Department are screened by the librarian to determine if Brodart can handle the title. Materials such as documents, those in a foreign language, serials, non-print materials, scores etc. are not handled, so such orders are process using "regular"

procedures, although order preparation may be accomplished on IROS. These categories amount to roughly 40% of all USC orders.

The 60% of our orders searched by the terminal operator can be divided into two components: those found in the IROS data base (hits) and those not found (non-hits). The hit rate, a key indicator of IROS' suitability for an academic environment, has consistently exceeded 80%. On the average, hits take less than two minutes to locate, verify, prepare, transmit, and print. Non-hits are set aside to have the publisher coded and are later manually keyed and ordered from Brodart through IROS. The 2.5 minute/order average is a composite for all IROS orders, whether hit or non-hit.

At USC, IROS related increases in productivity have allowed a smaller full-time staff to process substantially larger number of orders. The searching team, freed from bibliographically searching all IROS orders, has time available for searching more orders for duplication. Reliance on one principal vendor has simplified administrative duties, since decisions regarding choice of dealer have been minimized and the number of exceptions to be dealt with have been reduced. The receiving and filing functions, largely untouched by IROS, have been supplemented with additional part-time student assistants.

VENDOR PERFORMANCE

With nearly two-thirds of all USC orders going to Brodart, Brodart's performance is crucial to the success of IROS and consequently has been (and still is being) monitored carefully. Through mid-September, the mean delivery time for hits is seven - eight weeks from date of placement. Non-hits average 9 - 10 weeks. Relative frequency of delivery in thirty day intervals exhibits a U-shape curve, with 35-40% received within 30 days, another 15-20% in 31-60 days, 30-40% move in 61-90 days, and 8-15% in more than 90 days. This reflects Brodart's inventory pattern, with those titles received during the first month being in stock and those taking 2-3 months being ordered from the publisher. These figures are comparable to pre-IROS standards.

Delivery statistics are for completed transactions only and do not reflect those items ordered but not delivered, whether cancelled or left unfilled. This area seemed potentially troublesome, if we unconsciously tried to

"force" too many orders to Brodart through IROS. Our monitoring of the cancellation rate has shown that this problem has not developed. In fact, Brodart's cancellation rate of under 5% showed a decrease from pre IROS levels.

SYSTEM PERFORMANCE

When putting any new system into operation, the risks of malfunctions are naturally higher than in using a fully tested and proven one. USC, in agreeing to be a test site for IROS, was aware of these risks, and the occassional problems that have arisen were expected. This is not to minimize the disruption that excessive down time can create. However, Brodart's response, based on a knowledgeable understanding of library processes, has generally been prompt and effective. Presently, the system is operating smoothly, and we are cautiously optimistic that the "bugs" have been ironed out.

System capabilities have also been enhanced since its installation. Initially, changing from one fund account number to another was time-consuming, and search techniques were limited and often ineffective. Brodart took our suggestions (complaints?) to heart, and these problems were rectified resulting in faster ordering and a higher hit rate.

COST EFFECTIVENESS

Cost effectiveness has been defined as a reduction in the average cost of placing an order. For the eight months immediately prior to the implementation of IROS, USC experienced an average cost of $3.02 per order, including only expenditures for salaries and wages. To maintain this figure in 1977-78 given our expected level of expenditures, including IROS charges, requires that we place 24,347 orders. This is USC's breakeven point for cost effectiveness. Since we project ordering 31,900 titles at an average cost of $2.30, we exceed our breakeven point by a substantial margin.

A truly meaningful analysis would compare 1977-78 costs with and without IROS to see which course is most cost effective. Without IROS, another permanent staff member would be needed for typing and searching, a move which seemed infeasible, and the transfer of a professional position to Public Services could only be on a half-time basis rather than permanently. Coincidentally, these costs almost match IROS charges, although fringe benefits for the new position were excluded. Thus, the projected average cost for 1977-78 without IROS is $2.34 as compared to $2.30 with it. While this does not represent tremendous cost savings with IROS, it does indicate that at USC IROS is cost competitive. Plus, many benefits from IROS were not costed in. As examples, postage is saved on 60% of our orders, and public services gained half a professional position.

In conclusion, we currently believe IROS allows us to increase our level of ordering without additional personnel and in a cost effective manner.

ADVANTAGES AND DISADVATAGES

The following are the advantages of using IROS:

1. Production has been increased.
2. Three weeks have been eliminated from Brodart's first time of shipment.
3. Brodart's interpretation of our order citation has been eliminated for hits.
4. The orders are easier to prepare than on a typewriter and the potential for typing errors is greatly reduced.
5. The publication status of an item is known at the point of order. This prevents ordering OPs, OSI, etc. NYP status informs the selector that delivery may be postponed pending publication.
6. There are savings in mailing time and postage costs as well as less dependence on the US mail service.
7. The system fits into manual operations easily.
8. An accurate ISBN appears on all of our orders slips. This will be later used in the Catalog Department for searching on OCLC.
9. The system can be linked to Brodart's COM catalog system and in the future to CLSI.

The following are the disadvantages of using IROS:

1. All ordering of trade titles stops if the system is down.
2. The library relies heavily on one vendor. If that vendor does not carry a sufficient number of the library's orders in stock or has problems in getting books from the publisher, the library's performance will suffer.
3. The system handles only U.S. trade items; a second set of routines must be used for all other materials.
4. The system is an ordering mechanism only. It is not an on-line on order file nor does it accomplish fund accounting. Furthermore, cancellation notices and other messages cannot be transmitted through IROS.
5. The system is probably cost effective only in libraries ordering over 24,000 titles. The cost effectiveness of the system must be carefully reviewed by the individual library. USC's experience seems to show two factors involved:
   a. IROS is cost effective only for relatively large ordering levels, and/or
   b. IROS is cost effective only if large increases in ordering are anticipated or if manpower cutbacks are mandated or feasible.

SYRACUSE UNIVERSITY LIBRARIES

COMPUTER SERVICES

The Syracuse University Library Information System (SULIS) was conceived and designed with the intention of decentralizing Technical Services functions (i.e., Acquisitions and Cataloging) and providing decentralized bibliographic access of retrieval capability. It was to be a total, integrated system, including circulation and serials control.

In the original concept, order information would be fed into the system via terminal directly from the point of origination. The requestor would have available an inventory of the existing collection to check for duplication, and the ability to input new or revised data directly into the system. Order documents would be produced and delivered to a processing center, which would be responsible for maintaining appropriate physical files, processing receipts and invoices and doing routine or "acquired" cataloging (cataloging by rote, using acquired copy, without imposing any judgmental criteria except to confirm that the book in hand is the one described). A great many automatic controls were designed into the system which permitted or prevented certain conditions with respect to a particular transaction. The possibility of human intervention in the process was limited as much as possible. The system would be automatic.

Cataloging requiring judgment would be done by a professional cataloger assigned to a subject staff in a public service area. Catalogers would input directly to the system, ignoring conventional authority structures. User access would be greatly expanded beyond present day limitations by permitting the introduction of variant author, title and series information. Like materials would be brought together by the introduction of a common number called a Set or Header number. The retrieval system would display in-process information concerning any particular title, as well as indicate the final disposition of cataloged materials, including call number and branch location.

In summary, the system was designed to permit decentralized technical processing and decentralized bibliographic access to the holdings of the libraries, with a processing center to take care of associated routine clerical chores.

Fortunately or unfortunately, depending upon one's philosophy of library service, the original system was not implemented as conceived. Retrospective conversion was mishandled and literally hundreds of thousands of poor records were created. This was not a grave error in itself, as the system is predicated upon free form data rather than upon nationally accepted authority structures. It was inconsistent, however, with the reality of the card catalog, which continued in parallel, and which requires adherence to an authority structure. Still worse, the computer retrieval program, SULIRS, is based upon character-by-character

recognition, thus making consistency and a reliance upon authority almost mandatory. Retrieval should have been based upon alphabetic search keys rather than one-to-one character matching. The same author may be represented in the system in half a dozen or more variant forms, making retrieval difficult unless the user, by luck or prior knowledge, is aware of all of the imbedded combinations. Similarly, the lack of consistency in the establishment of "Headers", which are intended to bring like materials together, has in fact effectively lost portions of the collection through the proliferation of forms of entry for the same series or set title. Most damning of all, the automatic checks or prohibitions designed into the system as safeguards against human error frequently turn a simple function into a complex exercise, requiring various improvisations in order to place orders, receive materials or to process invoices. These improvisations, in turn, create more problems, and eventually affect the finished product, the cataloged record that represents a bibliographic entity in the retrieval system.

There are aspects of the acquisitions operation that were not comtemplated at all, such as the ability to process partial receipts, the capacity of the system to retain encumbrances for partially unfulfilled orders, or even to permit payment of unanticipated subsequent receipts. Claiming unfulfilled orders is clumsy and ineffective, and there is no capability for claiming partials.

The serials control portion of the system was never designed. The libraries are functioning with manual serials control but are inhibited by artificial restraints dictated by an unborn computer system.

The removal of all but skeletal professional staffing from Technical Services and reliance instead upon a clerically staffed processing center simply has not worked. The direct input of orders was never implemented. Professional catalogers were not assigned to the subject areas, but were eliminated from the staff because of budget reductions. Instead, bibliographers with no previous cataloging experience were assigned this additional responsibility. What we ended up with was a computer system too complicated to be coped with by a technical services staff which included too few professional librarians. The technically competent people left in processing have of necessity adopted shortcuts which result in omissions or worse. Procedures are not written down, morale is low, and turnover high.

In serials, inadequate control has resulted in inadvertent duplication due to inconsistencies in the form of entry; there are inconsistencies between cataloged records and the form of records found in manual and computer files. We are unable to contemplate early participation in the National Serials data program through OCLC until we make major efforts to reestablish

bibliographic integrity and consistency in our manual as well as our computerized serial records. We are incapable of generating a list of our serial holdings from the present system, either from manual or machine files. The computer produced periodical listing, which is the only inventory of periodicals available to the public, lacks adequate cross referencing and offers a sketchy and often inaccurate statement of holdings. It is, in fact, not even complete.

Acquisitions can be made far more effective through simplification and by the addition of various capabilities which do not presently exist. This is an area of major concern. To accomplish our objective we first separated bibliographic file creation from acquisitions and in-process functions. This was accomplished by causing file creation to occur as a result of cataloging in the OCLC system. Various file maintenance quality controls prevent tampering with the finished product. In-process information available through the terminal system is handled differently, and the interdependence of the present systems design will be broken by the creation of integrated but detachable modules. Acquisitions redesign may then proceed.

Circulation, which is the most independent of our existing subsystems, must be improved. We must decide whether we want an inventory system or an absence system. An inventory system, which for many reasons is more desirable albeit more costly to operate, maintains a constant inventory of every item in the collection, whereas an absence system records only items in circulation. At the present time we have a mix of the two. We must also investigate alternate methods of data capture. We are presently using punched cards and badges with Hollerith coding. It is our intention to move to bar code data capture equipment as this is technically more reliable and economic. We must also decide whether or not some aspects of circulation will every be operated in real time, which is the only way that adequate control of reserves, holds, renewals and recognition of invalid borrowers can occur. This will involve the use of a mini computer, and consideration should be given to commercially available systems.

February 23, 1978

VA. POLYTECHNIC INSTITUTE & STATE U.

S E L F S T U D Y

Acquisitions Department

University Libraries

Virginia Polytechnic Institute and State University

26 January 1976

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I

INTRODUCTION

The Acquisitions Department is one of four major departments within the organization of the University Libraries. It is a service unit primarily responsive to the other departments of the University Libraries. However, it must operate within the guidelines of the University's Purchasing Office and Accounting Office and in close cooperation with those agencies. This department is also the primary point of contact for the University Libraries with publishers, vendors and other representatives of the book trade.

One of the most significant changes within the University Libraries during the past decade was the great increase in the book, periodical and binding budget. The expenditure of this budget is the primary task of the Acquisitions Department. The increase of over 800% from $166,912 in 1965/66 to $1,563,000 in 1974/75, created the need for new management techniques, revised policies and procedures, and the investigation and adoption of any available means to reduce effectively the administrative work-load involved in such large expenditures.

With one exception the primary mission of the Acquisitions Department has not changed since 1965. The major change occurred in 1970 when the responsibility for book selection was transferred from Acquisitions to the three subject divisions. This was a good decision in view of the reorganization of the University Libraries into the subject division concept. After a shaky start this change is now well accepted by most personnel and is working quite well.

Another major change made in 1967 was the agreement with the University's Purchasing Office to permit the Acquisitions Department to make direct obligations against the book, periodical and binding budget. This greatly expedited the processing of purchase orders, reduced the time required to order and receive items desired for the collection and the follow-up and resolvement of problem areas. With regard to the book, periodical and binding budget, complete autonomy is now enjoyed by the Acquisitions Department with the exception of compliance with policies, procedures and forms established by the University Purchasing Office. These present no problem at this time.

Several management techniques were adopted in 1971 which have greatly increased the effectiveness of the Acquisitions Department in carrying out its responsibilities and duties. These included a significant expansion in the use of blanket orders to obtain current materials on an automatic basis without specific orders; the use of vendors and agents for the purchase of materials, thus greatly reducing the administrative work-load of placing orders, receiving materials and initiating payments; and the purchase of large collections, normally on a subject basis.

Finally, a major factor that affected departmental development was the use of automatic data processing. In 1968 the University Computing Center developed the initial system which was primarily in the sorting of orders, the printing of purchase orders, and the printing of cards for manual filing in the in-process file and the on-order file. In 1972, a greatly improved system was developed by the University Computing Center and we now have a very effective automated acquisitions system. The current system prints purchase orders, prints the In Process Listing, maintains some eighty separate accounts within the book, periodical and binding budget, and prints out claims and cancellation notices. Of all the major changes in mission, organization and techniques of the past decade, the automated acquisitions system has had the most impact on the effective development of the Acquisitions Department.

II

PURPOSE

MISSION

The basic responsibility of the Acquisitions Department is to order and receive all materials and services chargeable to the book, periodical and binding budget of the University Libraries. Gifts, exchanges and discards are appropriately processed. In addition, the Department is charged with the centralized mail room of the University Libraries, handling all shipping and receiving by mail and all other means.

Specific responsibilities:

a. Establish and maintain blanket orders, standing orders, and subscriptions in such a manner as to receive the maximum amount of current materials on an automatic basis without need for specific orders.

b. Receive and process orders for materials not receivable on an automatic basis.

c. Maintain records reflecting the allocation of funds to the various accounts and the encumbrances and expenditures against those accounts.

d. Receive, process, and pass to the proper location items received from any source or by any means.

e. Maintain a record of all items on order and received, and distribute to interested departments, divisions, and personnel an up-date of such record on a weekly basis.

f. Maintain the Master Binding Record. Pick up and process all current materials in need of binding in accordance with established Master Binding Records. Receive and process other items in need of binding or mending as passed by

Preparations, subject divisions and branch libraries in accordance with established quotas.

g. Dispose of excess and discarded materials by gift, exchange or destruction.

h. Process for payment all valid obligations against the book, periodical and binding budget.

i. Maintain liaison for effective relations with vendors, publishers, purchasing office, accounting office, representatives of the faculty, and other departments and divisions of the University Libraries.

j. Develop the allocation of funds from the annual budget to the various academic department and library division accounts.

k. Prepare and distribute periodic reports on the status of all accounts established within the book, periodical and binding budget.

l. Operate the mail room, including shipping and receiving for all elements of the University Libraries.

Analysis of current services and responsibilities:

a. The concept of obtaining the maximum amount of current materials without need for specific orders should be retained. This involves continued use of blanket orders as well as the use of vendors and agents as a means to consolidate administrative effort. The only alternative to this concept is additional staff, not only within Acquisitions but also within the subject divisions to augment their selection, verifying and searching procedures.

b. Review and refinement of the blanket order programs must be accomplished as a continuous project. Periodic review of established subscriptions and standing orders is also a must. These programs now make up over 50% of the annual budget and this percentage will no doubt increase. Review and changes are required because of the changes in the book trade as well as changes in the scope and extent of the curriculum of the University. These cannot be considered as static.

c. Most if not all of the processing of orders, reports on funds, passing of items to Preparations, and revision of the In Process Listing, with all of its important information, is now done or controlled by the automated acquisitions system. This system is a combination of on-line and off-line batch processing, with most of the information presented in printed format. Increased capabilities of

of automation and certain disadvantages in the off-line system lead to an obvious objective to review our current system and determine the desirability of certain major changes. A detailed study and a thorough system analysis are required before any conclusion can be drawn -- such as we should immediately place the entire system on-line. The study and analysis must consider the following aspects of the situation, as a minimum:

(1) The cost effectiveness of the current system.

(2) The possible use of microform in place of the current printed formats of reports.

(3) Changes in the capabilities of the University Computing Center.

(4) Utilization of the recently acquired ADP equipment by the University Libraries.

(5) Expansion of the acquisitions system as related to the new Circulation and Finding System, the proposed cataloging system, a possible serials system, and other future automated projects of the University Libraries.

d. One aspect of the automated acquisitions system that has not functioned as well as it should has been the program for claims and cancellations. Although an integral part of the system, all of the fault cannot be laid to the automated system. In recent months more orders were placed through the system than normally, thus leading to saturation. Failure of some vendors to report or respond to orders also placed an undue strain on the system as well as certain limitations in the cancellation code. Currently every effort is being made to reduce the backlog. The next step is a review of policies and procedures as required to prevent future backlogs.

e. The Binding Program of the University Libraries received considerable criticism during the last self-studies report, and there was little or no immediate improvement. 1971 saw the first major increase in funds for binding. 1973 and 1974 saw a major study of the binding program and in September 1974 a new project -- referred to as the Master Binding Record Program -- was initiated. The final objective of this program is to transfer all aspects of binding to the Acquisitions Department. Currently it is a split responsibility between Acquisitions and the subject divisions. As the result of a thorough review of the new program, after one year of implementation, certain changes have been made, but not in the final objective. Of immediate concern is the slow progress being made. What was estimated to be a one or two year program will take at lease five years to complete at the current rate of progress.

f. Although the listed functions of the Acquisitions Department include the receipt and processing of gift material and the disposition of excess material by means of gift or exchange, the Department has never been staffed for these functions. Recent increases in the amount of materials being received as gifts as well as a noticeable amount of materials being screened out of the collection indicate a need for review of this situation. Of special significance are recent efforts to determine a need for the excess materials on the part of other libraries, especially those in the consortium of south-west Virginia. In effect we have not had a formal gift and exchange program. If such is desired or becomes essential by a continued increase in availability of materials, then a formalized effort and additional staff will become necessary.

g. One of the most complicated and time consuming procedures is the processing for payment of valid obligations against the book, periodical and binding budget. In accordance with state and university guidance and regulations, we must validate and process such payments on state forms in quadruplicate, enclosing copies of the invoice from the vendor. Payment from a statement is not permissible nor is the use of computer generated invoice forms yet acceptable. Furthermore, the actual payment is made by the State Treasurer in Richmond, with the cycle of processing a voucher through the Accounting Office of the University to Richmond and finally payment to the vendor taking approximately four weeks. Fortunately most of our vendors accept this length of time, in fact some have complimented the Commonwealth's system and speed in comparison to other states and universities. Efforts will continue to reduce the amount of paper work and administrative effort in this area by the increased use of vendors versus direct orders, and the consolidation of invoices in weekly or monthly batch processes. The latter step, however, does increase the time element in the payment process. Further improvement in the area of payment will depend primarily on changes in accounting procedures by the state.

h. Personal contacts, oral and written communications are continuously maintained with all important representatives of the book trade with whom we deal. It is amazing how the number of visits from such representatives increase in direct proportion to the size of our book budget. Daily contact is maintained with various members of the other departments and divisions of the University Libraries. A close relationship and frequent contact are also maintained with the Purchasing Office and the Accounting Office of the University. Ideal relationships are enjoyed with those two agencies and the utmost of cooperation is always received on any problem area. Contact with the academic faculty is normally restricted to memoranda containing guidelines and instructions on preparing Order Recommendation Forms, the extent and coverage of blanket orders, and the annual allocation of funds from the Book, Periodical and Binding budget.

By virtue of our organization most of the queries from the academic faculty on the status of specific orders, availability of funds, and other aspects of daily operations are received and answered by the subject divisions and branch libraries.

i. The development of the annual allocation of funds from the Book, Periodical and Binding Budget to the academic departments, subject divisions, special funds and accounts for blanket orders, subscriptions, etc., is an area of utmost concern and in need of further expansion and explanation to all concerned. Prior to 1970, the allocation of funds to the various academic departments was a matter handled in the Office of the Vice President for Academic Affairs, and the Director of Libraries had very little input. For the year 1971-72, the breakdown of the funds was placed under control of the Director of Libraries, who at that time followed the same ratio, in the breakdown of funds to the academic departments, as had previously been used. Not until the fiscal year 1972/73 was a formula adopted for the allocation of funds to the academic departments. Basically, this formula allocates funds on the basis of weighted student credit hours and the number of faculty (teaching and research) assigned to each department. In the break-out of funds among the three subject divisions of the University Libraries, the formula was modified to recognize weaknesses in the collection and the fact that there is more publishing activity in certain disciplines than in others. Also in 1971, the use of special funds was initiated in recognition of major changes in the curriculum, e.g. the addition of a graduate level course in a specific discipline. As a further effort to relate the budget to the real world of publishing a study was made of expenditures made in 1974/75 as compared to the activity of U.S. publishers. Details as to these aspects of the allocation of funds are discussed in Section III.

   The ultimate objective of the allocation of funds and the study and analysis of <u>all</u> expenditures is to determine how much support is given to each college and academic department. Efforts to date have included 61% of the budget. A major part of the budget, the cost for renewal of subscriptions and standing orders, has yet to be analysed. This major effort is still necessary to meet the ultimate objective of stating what percent of our book, periodical and binding budget is in support of each college and academic department. Such a base of information is an absolute necessity to see that (1) we are in effect supporting each discipline in a relatively equal manner as compared to the other disciplines in our curriculum and (2) we are in effect properly supporting each discipline adequately in comparison to the availability of materials within the publishing world.

j. The preparation of reports on the status of accounts is now accomplished by the automated acquisitions system. It is

currently in an off-line mode with reports printed and distributed on a weekly basis. As more detailed analyses of the expenditure of funds become available and desirable, the current system can be further refined and made more responsive.

FINANCIAL MANAGEMENT AND OTHER SERVICES

The current arrangement with the Purchasing Office of the University wherein the Acquisitions Librarian is authorized to make obligations against the Book, Periodical and Binding Budget in the form of purchase orders has greatly increased the effectiveness of the ordering procedure, reduced the time element involved, and allowed for much quicker response to queries and problems as they developed. There is no indication of change to this arrangement, and it is assumed that it will be retained.

Close relationship, coordination and policy guidance is received as required from the University Accounting Office. State vouchers must be prepared for each invoice or group of invoices from one vendor and processed for payment by Richmond. All vouchers are passed to the Accounting Office for review and transmittal. Few problems have been encountered in this processing and those have quickly been resolved, normally at the clerical level.

One major problem in the purchasing and accounting process is the fiscal year cycle imposed by state policies and procedures. The fact that all monies allocated must be expended by 30 June of each fiscal year places an undue effort for payment during the last quarter and also requires a detailed examination of all outstanding obligations to insure full but effective utilization of funds before the end of the fiscal year. It must be recognized that this problem is beyond the purview of the University Libraries and in fact the University. It is worthy of note that we have met this year-end crunch in an excellent manner the past few years and have, in fact, been able to make use of additional funds each year as they became available to the University near the end of each fiscal year. In June of 1975 this windfall amounted to approximately $53,000.00.

A major service received by the Acquisitions Department is the automated acquisitions system which was developed by and is now supported by the University Computing Center. On-line terminal access is available every day and

many batch processes are performed off-line every week. The 800% increase in our book budget, with little or no increase in personnel, has been made possible only by this service. Of utmost concern have been recent rumors, discussion and pessimistic warnings that the Computing Center has become saturated and may undergo some major changes that will have an impact on the users. It cannot be overemphasized that the success enjoyed by the Acquisitions Department and the University Libraries in the execution of the book, periodical and binding budget rests almost entirely on the automated acquisitions system. Any major loss in the effectiveness of this system would be disastrous to our current programs.

VII

PROJECTIONS

a. Automation.

The automated acquisitions system has now been operating in a most effective manner for over two years. Major modifications and changes are under consideration, primarily to make the system more responsive in certain areas and to include more features in the on-line mode. Also to be considered is the impact of possible saturation on the part of the University Computing Center and the possible change-over from the Center to the recently purchased automated equipment by the University Libraries.

b. Gifts, exchanges and surplus material.

The increasing amount of gifts, exchange requests, and material available for disposal as not required for the collection is developing a need for study of this program. If the trend continues, the development of a division properly staffed to handle these types of operations may be indicated.

c. U.S. Documents.

There is an active committee of the University Libraries on the important subject of U.S. documents. Of major interest to the Acquisitions Department is the need for consistent policy and adherence to that policy of what documents are to be retained; which ones are to be classified for the collection and which ones to be temporarily retained but not cataloged. Of equal importance is resolution of the problems created by the acquisition of some documents in microform and the proper disposition of the hard copy no longer desired for the collection. It is highly recommended that definitive policies and procedures be developed and approved and that a scheduled program, to include the use of quotas, be adopted so that the problem of documents can be resolved.

d. U.N. Documents.

Although not nearly so large in scope, the problem of U.N. Documents needs the same approach as proposed above the U.S. documents.

e. Serials.

The problem of serials, although not unique to this library, does need some particular attention. Recent efforts by a University Libraries committee were not entirely satisfactory. It is estimated that 90-95% of the problems in serials originate outside the sphere of influence of the University Libraries. What is needed then is an organization that can monitor, study and be responsive to these changes, before or as they occur, rather than only a means to meet the changes after they become known -- usually as a problem.

It is recommended that a major effort be made, within the University Libraries, to study and develop an approach to the serial question. The following general areas, as a minimum, should be included in this effort.

a. A thorough study of all existing research and publications on the subject, to include dissemination of important developments throughout the staff.

b. Involve each subject division in a study of its part of the serials publishing world. Develop expertise in the field of serials within each division much the same as now exists for monographs.

c. Involve each subject division in the decision making process in how serials are to be handled by Preparations.

d. Resolve, by retroactive cataloging, the current inconsistencies, developed over many years, in how serials, especially series, have been handled. Specifically involved are analysed series and series cataloged separately with and without series entries.

e. The application of automation to the serials problem. Maximum awareness is essential of past and current efforts in this field by other libraries. Also essential is the relation of any application to serials, by the University Libraries, to other systems already in existence or proposed -- e.g. the Acquisitions System and the Circulation and Finding System.

f. The development of a proposed approach to the handling of serials, considering all aspects, pros and cons of centralization, decentralization, responsibilities, policies and procedures.

f. The Book, Periodical and Binding Budget.

It is regrettable that the momentum for an annual increase in the book, periodical and binding budget, to meet the cost of inflation and to continue our efforts to elevate ourselves above a "deficient" library was lost in 1975-76. It is indeed essential that the annual increase, noticeable since 1963, be reinstated for 1976/77 and following years.

Progress has been made in identifying major elements of this budget, establishing a basis for the allocation of funds, and in more closely relating each expenditure with a specific subject discipline. However, the surface has only been scratched and much more work has to be done. This is essential not only for sound management decisions in the use of funds, but also in explanation to the academic faculty and their acceptance of the policies and efforts of the University Libraries.

A high priority on our short range efforts is placed on this project.

U. OF CALIF./SANTA BARBARA

TO: Information Systems Policy Committee, UCSB

FROM: Donald C. Davidson, University Librarian

Re: Book Fund Accounting Project (BOFAC) Report

INTRODUCTION

BOFAC (Book Fund Accounting) as a description of the Irvine system of software and hardware (in which we share) is deceptive and simplistic if taken as a literal description of the entire book money management system on the Santa Barbara campus. It does apply to that part of the system where conventional accounting methods are necessary to control total library book account expenditures and encumbrances (BOFAC has helped in this regard with its adjusted "free-balance" feature), but it does not strictly apply to other aspects of managing the book account. This is because, for internal management purposes, we have never divided the library book account into subfunds with "fixed allocations". Such a system becomes inflexible in meeting unexpected demands upward and tends to encourage unwise expenditures when natural demands are less than expected. Instead, we have a system of "guidelines" which keeps us informed on purchasing trends by subject area and by types and categories of material. Because the book and related trades are somewhat unpredictable, as are faculty and patron demand, we have never been concerned about exceeding a "guideline" for a particular category, or on the other side, having overestimated what we might need in that category. Budgeting principles, analogous to a monthly family budget, have prevailed on an annual basis for the guidelines. The point cannot be made too strongly that "guidelines" are different from "funds" with "fixed allocations". When we prepare our management "guidelines" for the impending year we base them on what we purchased in the past and on what we expect to buy in the budget year.

With BOFAC we have preserved the "guideline" approach but now use its accounting methods for greater ease in maintaining our "guideline" figures and for obtaining greater accuracy and currency. The system automatically produces an adjusted "free balance" for each "guideline", but we use the figures only to see roughly how we're doing in terms of our budgetary plan -- we may apply the brakes for some areas, if revised judgments decree, and may accelerate in other areas. All of the precise accounting capacities of BOFAC were therefore not required; but the system as a whole has conferred distinct advantages. The full advantages for analysis of information about purchases in a machine manipulable data base have yet to be realized; we believe it to have great potential in budgetary applications and in collection building.

With the foregoing in mind, the report below emphasizes these two parts, A, Overall Budget Control, and B, Internal Budget Control or "guideline" monitoring.

Cost Comparison of the Manual and the Computerized Book Fund Accounting Systems at the UCSB Library over the 6 months, July 1 - December 31, 1972 (prepared by Lies Jaccarino and Don Schippers).

At first glance it seems a straight-forward task to collect overall cost data 'before' and 'after' BOFAC (Book Fund Accounting), however on closer inspection there are a few complications.

As we have stated before, the new BOFAC system has inspired us to alter not only procedures it affects directly but also some that are not directly involved. Therefore it would be an over-simplification to compare the work throughput per person 'before' and 'after' the installation of BOFAC and credit BOFAC with all the savings; some of these savings could have been made without BOFAC. In addition, before BOFAC, UCSB did not keep an adjusted free balance for its book funds nor did it keep them by "guidelines" -- the subdivisions of the library book account used for monitoring various categories of purchases. The central feature of BOFAC, of course, is, that it accumulates free balances by way of each individual purchase order transaction and accrues them by "guidelines" or subfunds to produce a total adjusted free balance by fund, i.e. the original budget allocation -total expenditures, -total encumbrances, = free balance. Because of this feature, the total expenditure figure can be directly compared with the expenditure figure reported by campus accounting and discrepancies can be adjusted accordingly. (This is now normally done on a monthly basis.) Prior to BOFAC only a mixed figure was available as encumbrances and expenditures were not distinguished from each other. Gross adjustments were made quarterly on the basis and complete acceptance of campus accounting expense figures. BOFAC, therefore, provides the library with exact controls over its expenditure processes and enables it to isolate and correct specific errors on a regular and timely basis. How many extra manhours would it have cost us to do this with a manual system? The answer can only be an educated guess: 1 1/2 FTE?

The best possible approach would be to compare the separate 'activities' of book fund accounting 'before' and 'after' BOFAC. But even this cannot be done in a precise manner because the end products of the previous manual system and BOFAC are not the same. To make BOFAC functional, some new activities became necessary, while other activities that were necessary to maintain the old system were dropped. It is also important to remember that, although BOFAC encompases the largest number of activities in the Book Fund Control Section, it does not cover them all. In spite of these limitations it is possible to identify four major categories of basic activities that can be used to compare the efficiency of the BOFAC system to that of the manual system. These can be viewed as the activities in the Book Fund Control Section that BOFAC took over. These 'comparable' activities are 1) Encumbering, 2) Expending, 3) Cancellations, 4) Reports. We must keep in mind that a comparison of the number of manhours needed to do a comparable job with and without BOFAC hinges on the word "comparable."

In the following paragraphs we will show some data on the comparable activities (the calculations are based on our average volume of 2,000 orders per month and 10% cancellations):

	Per Order		Per Month	
	Old	New	Old	New
Encumbering	90 sec.	25 sec.	50 hrs.	14 hrs.
Expending = Adjusting Price	not done	38 sec.	0 hrs.	21 hrs.
Cancellations	90 sec.	20 sec.	5 hrs.	1 hr.
Monthly Report	840 min.	120 min.	14 hrs.	2 hrs.
			69 hrs/mo	38 hrs/mo

The saving is 31 hrs/mo. In order to convert this to FTE, we consider 1 manmonth = (ave.) 173.3 hrs. After deducting 4 hrs. sick leave, 11 hrs. coffee break, 2.3 hrs. meeting time, and 10 hrs. vacation time, 1 manmonth = (ave.) 146 hrs. Therefore 31 hrs/mo. = $\frac{31}{146}$ = 0.21 manmonths. The saving is 0.21 FTE if we include expending. If we exclude the expending the saving is larger. The saving then is 52 hrs/mo. = $\frac{52}{146}$ = 0.36 manmonths. This 0.36 FTE is saved if we only compare: Encumbering, Cancellations and the Monthly Guideline Report.

A. Summary

1. Comparing the functions of Encumbering, Cancellations and preparing the Monthly Guideline Reports before BOFAC and after BOFAC we save 0.36 FTE with the new system.

2. The Cost of the New System = $630/mo.* which is equivalent to 1 FTE LA I/II/III.

3. Of the 0.36 FTE we save, we pay 0.15 FTE for the expending function which buys us more accuracy and the highly desirable "instant balance" figure at any time.

B. Where did the remaining 0.21 FTE go between July 1 - Dec. 31, 1972?

1. To one-time cost of debugging a still newly installed system (Tie-line problems, mainly).

2. The backlog was cleared up.

*The Cost of the New System (6 months, July 1 - January 1, 1973 -

Computer time:	$1,346
Disk Storage:	1,146
Tie-line charges:	639
Rentals:	646
	$3,777

C. Where will that 0.21 FTE go from now on?

1. Keeping current (no more backlog formation).

2. Reassignment to other tasks not previously done (not new tasks generated by BOFAC).

D. FTE vs. Dollars.

0.36 FTE of a combination LA I,II,III @ 624 =	$225/mo.
0.15 FTE is spent on "free balance feature" =	$ 91/mo.
0.21 FTE is spent on "keeping current" and other duties =	$134/mo.

E. Benefits

For $630/mo. the Library is buying:

1. Free balance feature [manually may have cost $945/mo. (for this degree of accuracy) or 1 1/2 FTE; now it costs $91/mo.].

2. Accessibility of data for management reports in addition to the monthly guideline report. (Management reports are rapidly becoming a serious need.)

3. The Book Fund Control Section is able to keep current in all aspects of its work. (Manually would have cost $468/mo. or 3/4 FTE.)

4. Flawless filing in vendor file*. (Saves 2 hrs/week.)

5. Shorter typing time (codes/vs. full vendor names and guideline designations).* (Saves 6 hrs/week.)

6. Freeing part of an FTE for other duties. (4 hrs/week.)

F. Conclusion

BOFAC buys features of accuracy, currency, and history data that could only have been obtained at very high cost in a manual system. It is our opinion that these features are highly desirable and therefore well worth their small cost. It is further our opinion that an additional 1 FTE would have had to be added to the Accounting Section for maintaining the old manual system on a current basis, if it had been retained. Finally it should be pointed out that any increase in volume would make the system even more worthwhile because the part of the cost spent on equipment rental stays constant with rising volume.

*The savings of 0.2 FTE in typing and filing time have already been realized by staff reduction in the Order Dept. between 7/72 and 1/73.

cc: Library Council
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FINAL REPORT ON THE PROJECT "INTRODUCTION OF THE LIBRARY AUTOMATION PROGRAM OF THE INDIANA COOPERATIVE LIBRARY SERVICES AUTHORITY IN THE CATALOGING DEPARTMENT OF THE UNIVERSITY LIBRARIES"

Robert J. Havlik
Assistant Director for Technical Services
July 6, 1977

The purpose of this project was to introduce the library automation program of the Indiana Cooperative Library Services Authority (INCOLSA) in the Cataloging Department of the University Libraries. The objectives of the program included: (1) reduction of the inflationary cost of acquiring, cataloging and processing books in the University Libraries; (2) creation of new and improved procedures seeking further savings in library operations; (3) provision of more accurate and prompt library information. Additional benefits would include (4) faster, more efficient processing of all library materials; (5) expansion of the resources available to the library through inter-library cooperation; (6) reduction of the rate of increase of the total expenditures for the Technical Services Division. This project would also contribute to the education and library professions through the writing of scholarly papers describing Notre Dame's experience with automated procedures in the University Libraries and indicating benefits derived during the implementation of the program.

This final report will describe our experience with the introduction and implementation of the Library Automation Program and it's successes, failures and unresolved potentials in context of the above six goals which were set forth in our original application for Funds from Endowment C.

Background

In May 1974 the Indiana Cooperative Library Services Authority (INCOLSA) was organized to provide a legal framework to guide both short-and long-range planning

and development of a cooperative network for Indiana libraries. The University of Notre Dame's University Libraries were invited to participate in the Authority and in May 1974 the Board of Trustees of the University approved our membership and signed the cooperative documents, allowing the University to become a charter member of INCOLSA. Since that time Mr. Sparks has been active with the group as an advisor, member of the Board of Directors, and Chairman of the Ways and Means Committee.

In late 1974 a "Proposed Program of Indiana Cooperative Library Services Authority" was developed by the offices of INCOLSA. The first priority in this program was the establishment of a MARC-based cataloging service and initiation of Indiana participation in the Ohio data base. It was decided by the Executive Committee of INCOLSA that "whereas the Ohio College Library Center has offered extension of its services to library regions outside of Ohio and, whereas INCOLSA and OCLC recognize that utilizing computerized data processing and sharing of data would serve to reduce costs in Indiana libraries as well as promoting education through access by the library user to existing data bases; therefore, INCOLSA will contract with OCLC to provide INCOLSA and its participating libraries access to the OCLC data base, providing display terminals and communication lines from Columbus, Ohio to INCOLSA and its participating libraries, making available from the OCLC data base on-line union catalog and shared cataloging activity and machine-readable cataloging records on-line and producing and furnishing off-line catalog card production services".

The benefits of the library automation elements of the INCOLSA/OCLC program include specifically:

(1) Provision of access by Indiana libraries to the very large bibliographic data base developed in Columbus, Ohio by the Ohio College Library Center (a consortium) with the help of the Library of Congress.

(2) Conversion of acquisitions and cataloging processes in Indiana libraries to machine-assisted forms using that data base.

(3) Coordination of these new machine-assisted techniques of library cataloging with the established structures of bibliographic control (principally card catalogs) through a computer-produced card service, where significant cost savings are early available.

(4) Exploitation of the Ohio College Library Center (OCLC) data base to speed processing of library input through cooperatively shared cataloging data and through reference use of the data base in other library operations.

Not only were these specific benefits available to Notre Dame from the INCOLSA program but were augmented by the offer, on the part of the Authority, to subsidize partly certain elements of the initial expense. For example, through its membership in INCOLSA the University Libraries were able to receive partial support for one cathode ray tube (CRT) terminal and for data transmission line charges to allow access to the Ohio College Library Center computerized data base.

To take maximum advantage of these benefits to the University Library an "Application for Funds from Endowment C - Proposal for a Program for Library Automation" was submitted to Rev. James T. Burtchaell, CSC, on June 6, 1975. The Start Date of the project was October 1, 1975 and the End Date was to be June 30, 1978. The total funds requested from Endowment C were as follows:

1975/76 - $26,500
1976/77 - $28,950
1977/78 - $32,750

In September 1975 the project was approved but with a severe cut in financial support.

The total funds granted were as follows:

1975/76 - $26,499.25
1976/77 - $12,714.50
1977/78 - $ 00.00

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Because of delays in approval of the grant, which delayed delivery dates of the first terminals, we were given permission to carry over 1975/76 funds into 1976/77 until June 30, 1977.

The reduction of anticipated support has caused a re-evaluation of some of our hoped for goals on the project and has put a strain on the 1977/78 University Libraries' budget. In addition, time required to hire a new Head of the Cataloging Department and for replacement of 2 professional catalogers and several secretarial assistants in the Department has delayed our achieving peak efficiency by this date. However, we may report that the program has demonstrated large gains in service and savings in economy in the Cataloging Department.

The Effects of the New System

The introduction of the library automation program of the Indiana Cooperative Library Services Authority in the Cataloging Department of the University Libraries has had a dramatic impact on all Departments and Divisions in the library but more especially upon the Technical Services Division. Below are listed in outline form some of the major changes that have occurred in the processes of (A) Acquisitions and Collection Development and (B) Cataloging and Classification.

A. Acquisitions and Collection Development

1. Searching of new titles - Use of OCLC to search all new titles with 1976 inprints or later now allow us to identify, in the data base, all our current acquisitions and detect duplicates without looking first in the card catalog, and at the same time determine all the necessary bibliographic data for subsequent ordering and cataloging operations.
2. Ordering - The OCLC data base includes data not available in the card catalog which is needed for ordering purposes and requires an extra manual search, i.e., ISBN, LC number and price which are unique numbers used to order the book.

3. Accessioning - The availability of these unique numbers, i.e., OCLC number, LC card number and ISBN number also offer more specific identification of items which can be used during the accessioning process after the book is received.

4. Record keeping - the OCLC data base allows for the identification of items acquired by the library for which cards have been ordered and which are not yet on the shelf. Because of the ability to manipulate computerized data, it is also possible to reduce special cross references and special indexes now needed to locate manually filed records.

5. Routing - Because of series, standing orders and other special ways libraries organize various types of information it is frequently necessary to handle some materials by a different processing route than others. The OCLC data base now allows us to quickly identify special series or formats for processing.

6. Selection and Weeding of Orders - Because of the rapid access to Library of Congress data in machine readable form from the OCLC data base, it is possible to determine when a newer edition of a requested book is available. This allows the library to call the requestor and inform him if he wishes the new edition. The indication of the possessors of an expensive title has also allowed us to decide if it is necessary to purchase a copy if another one is easily accessable in the vicinity. The same logic applies to weeding decisions. If we have several copies of an older title and wish to reduce the number of copies and we find many copies are at hand in nearby libraries in the event of an emergency, decisions to keep or discard can be more easily made.

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Truly, we have created new and improved procedures seeking further savings in library operations, provided more accurate and prompt library information to library users and technical services faculty and staff, have achieved faster and more efficient processing for newly published and acquired monographs, and have had more information available to our Inter-Library Loan Department to help library patrons.

The OCLC/INCOLSA program has reduced the cost per unit to search, verify, catalog and process newly purchased titles in the library but a true figure of total cost saving of the system will be unknown until the acquisitions sub-system is in operation and the Cataloging Department is able to operate on a current basis with current titles rather than being burdened by the tremendous backlog, accumulated over the years, of material which does not appear in the OCLC data base and which must be converted to MARC format or originally cataloged.

Studies are now underway to find new ways to speed up various procedures and determine both a true picture of our costs per unit in addition to achieving an over-all cost reduction in Technical Services after the various backlogs and special collections are processed.

Looking Toward the Future

The introduction of automation into the Technical Services Division has taught us many lessons about our true needs in the Division. In the future efforts must be made in the following areas:

1. It is a fact that the computer system can organize and prepare library data to aid processing at a much faster rate than the concomittant manual operations can be performed on a book. Terminal operators have commented that fifteen minutes on the terminal can generate enough work for one hour

of subsequent manual operations. Additional help or short cuts must be found to handle the increased work generated if we wish to take maximum advantage of the terminal capabilities.

2. A method of help must be found to process the backlog of older materials received as gifts and bulk purchases if we are to make the system more cost effective. Since a large portion of these older materials are not cataloged in the OCLC system, we must do the original cataloging or conversion to MARC format for insert of data into the system at much higher costs and level of difficulty than mere retrieval of work done by others.
3. Improvements must be made in ordering procedures since a single portal processing system relying upon keyed input must handle the searched output of three computer terminals. The new acquisitions system utilizing an IBM 3277 Terminal system will be faster than the old system using an IBM 826 Key punch system but estimates indicate we may need two terminals or at least two shifts to handle the work load produced by the OCLC terminals.
4. The library will have to take a serious look at the utilization of other OCLC sub-systems available to us. To date we have restricted our operations to processing monographs. For too long the library has neglected our serials collections. Cataloging serials through the system as well as more rapid check-in of serials is now available and use of these sub-systems can clear up much of the confusion in our current manual record keeping operations in serials.

We wish to thank the Administration of the University of Notre Dame for granting us the funds to initiate this project.

CHART III

LIBRARY INPUT COSTS*
Cost Comparison: Manual vs. Automated Mode

	1974/75		1975/76		1976/77		1977/78	
	Manual	Auto-mated	Manual	Auto-mated	Manual	Auto-mated	Manual	Auto-mated
Preorder/Order	$ 60,225	$	$ 64,790	$ 62,119	$ 69,324	$ 60,272	$ 74,178	$ 58,077
Acquisition/Receiving	24,556		26,267	26,914	28,102	28,798	30,066	30,813
Cataloging:								
Cataloging Operations	114,209		122,171	99,130)	130,692	104,588	139,806	111,483
Card Production	33,970		36,245	10,001)	38,675	10,528	41,271	11,085
Book Preparation	5,025		5,377	5,377)	5,753	5,753	6,155	6,155
Catalog Editing	21,140		22,620	22,620)	24,203	24,203	25,897	25,897
Total Cataloging	174,344		186,413	127,128	199,323	145,072	317,373	243,510
TOTALS	$259,125		$277,470	$226,161	$296,749	$234,142	$317,373	$243,510
POTENTIAL SAVINGS:		-0-		$ 51,309		$ 62,607		$ 73,863

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* includes: labor, materials and services

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CHART V

LABOR AND MATERIALS COST FOR ACQUISITIONS AND CATALOGING OF LIBRARY MATERIALS

Automation Mode -- Projection to 1977/78

	1974/75			1975/76			1976/77			1977/78		
	no. units	cost/ unit	cost/ year	no. units	cost/ unit	cost/ year	no. units	cost/ unit	cost/ year	no. units	cost/ unit	cost/ year
Pre-Order/Order												
Receipt of ORF's				22,000	0.319	7,019	22,880	0.328	7,510	23,795	0.338	8,036
Pre-order search in Cataloging				22,000	0.860	18,935	16,720	0.857	14,326	11,440	0.849	9,717
Cost to search OCLC (labor)				15,840	0.954	15,120	18,075	0.808	14,607	19,677	0.716	14,094
Cost to search OCLC (look-up)				15,840	0	0	18,075	0	0	19,677	0	0
Cost to verify residue - 30%				4,752	2.642	12,555	5,423	2.719	14,745	5,903	2.797	16,511
Gift search/shelf - catalog				3,065	2.770	8,490	3,187	2,850	7,084	3,315	2.932	9,719
Sub-total			60,225			62,119			60,272			58,077
Acquisitions/Receiving												
Acq. prep. - order				15,840	1.043	16,532	16,473	1.074	17,689	17,133	1.105	18,927
Cost to file/on-order file				15,840	0.216	3,426	16,473	0.222	3,666	1,713	0.229	3,923
Assembly of data, pre-catalog				15,000	0.377	5,658	15,600	0.388	6,054	16,224	0.399	6,477
Sorting and routing				15,000	0.087	1,298	15,600	0.089	1,389	16,224	0.092	1,486
Sub-total			24,556			26,914			28,798			30,813
Cataloging												
*Cataloging Operations												
OCLC-hit catalog (labor)				14,725	0.862	12,690	15,314	0.887	13,578	15,927	0.912	14,530
OCLC-hit catalog (data base)				14,725	0.904	13,311	15,314	0.904	13,844	15,927	0.904	14,398
Cost, Polaroid film				1,111	0.3825	425	1,155	0.3825	442	1,202	0.3825	460
Pre-cat. NUC photo (labor)				1,111	0.428	476	1,155	0.442	510	1,202	0.453	545
Input cost NUC 2nd search			0	0	0	0	0	0	0	0	0	0
Pre-cat. NUC 2nd search (labor)				4,180	0.575	2,404	5,948	0.432	2,572	7,065	0.389	2,753
OCLC original cat. (labor)				4,180	11.438	47,810	5,948	8.601	51,157	7,065	7.748	54,738
OCLC original cat. (data base)				4,180	0.844	3,527	5,948	0.634	3,774	7,065	0.572	4,038
Local adjustments				9,462	1.848	17,487	9,840	1.90	18,711	10,234	1.96	20,021
Sub-Sub-total			114,209			99,130			104,588			111,483
*Card Production												
OCLC card service				170,000	0.034	5,780	176,800	0.034	6,011	183,872	0.034	6,252
Cross-ref. (labor/material)				30,258	0.139	4,221	31,468	0.144	4,517	32,727	0.148	4,833
Sub-Sub-total			33,970			10,001			10,528			11,085
*Book Preparations												
Monographs (labor)				20,441	0.164	3,357	21,259	0.169	3,592	22,109	0.174	3,843
Serials, bound vols. (labor)				9,307	0.164	1,528	9,679	0.169	1,635	10,066	0.174	1,749
Other (labor)				3,000	0.164	492	3,120	0.169	526	3,245	0.174	563
Sub-Sub-total			5,025			5,377			5,753			6,155
*Catalog Edit												
Filing, editing, etc.			21,140	170,000	0.133	22,620	176,800	0.137	24,203	183,872	0.141	25,897
Sub-Sub-total			21,140			22,620			24,203			25,897
Sub-total			174,344			137,128			145,072			154,620
TOTALS			259,125			226,161			234,142			243,510

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CHART IV

LABOR AND MATERIALS COST FOR ACQUISITIONS AND CATALOGING OF LIBRARY MATERIALS

Manual Mode — Projection to 1977/78

	1974/75			1975/76			1976/77			1977/78		
	no. units	cost/ unit	cost/ year	no. units	cost/ unit	cost/ year	no. units	cost/ unit	cost/ year	no. units	cost/ unit	cost/ year
Pre-Order/Order												
Receipt of ORFs	21,912	0.245	5,368	22,000	0.261	5,744	22,880	0.269	6,146	23,795	0.276	6,576
Pre-order search in Cataloging	19,531	0.55	10,757	22,000	0.528	11,627	22,880	0.544	12,440	23,795	0.559	13,311
Search in NPAC file	11,724	1.134	13,295	11,800	1.206	14,226	12,272	1.240	15,221	12,763	1.276	16,287
Cost to verify residue	7,807	2.76	21,515	8,800	2.642	23,253	9,152	2.719	24,881	9,518	2.797	26,623
Gift search-shelf/catalog	3,065	3.031	9,290	3,065	3.243	9,940	3,187	3.337	10,636	3,315	3.433	11,381
Sub-total			60,225			64,790			69,324			74,178
Acquisitions-Receiving												
Acq. prep. of order	11,213	1.324	14,846	15,840	1.003	15,885	16,473	1.032	16,997	17,133	1.062	18,187
Machine cost to repro. NPAC	8,141	0.015	122	8,200	0.015	123	8,528	0.015	128	8,869	0.015	133
Cost to file in on-order	11,213	0.244	2,736	15,840	0.185	2,927	16,473	0.190	3,132	16,473	0.204	3,352
Assembly of data, receipt	15,000	0.377	5,654	15,000	0.403	6,050	15,600	0.415	6,473	16,224	0.427	6,926
Sorting and routing	15,000	0.080	1,198	15,000	0.085	1,282	15,600	0.088	1,372	16,224	0.090	1,468
Sub-total			24,556			26,267			28,102			30,066
Cataloging												
*Cataloging Operations												
Cost of Polaroid film	2,767	0.3825	1,057	2,877	0.3825	1,100	2,993	0.3825	1,145	3,112	0.3825	1,190
Input to 2nd NPAC search	898	1.134	1,018	934	1.166	1,089	971	1.200	1,166	1,010	1.234	1,247
NUC photo labor	2,765	0.685	1,894	2,875	0.705	2,026	2,990	0.725	2,168	3,110	0.746	2,320
2nd NPAC search	898	3.918	3,518	934	4.03	3,764	971	4.148	4,028	1,010	4.267	4,310
Original cataloging	3,453	10.729	37,048	3,453	11.48	39,641	3,591	11.81	42,416	3,735	12.15	45,385
Prepared copy cataloging	9,663	4.683	45,247	9,663	5.01	48,414	10,050	5.15	51,803	10,452	5.30	55,430
Re-cataloging	778	10.391	8,084	778	11.12	8,650	809	11.44	9,255	841	11.78	9,903
Local adjustments	9,462	1.727	16,343	9,462	1.85	17,487	9,840	1.90	18,711	10,234	1.96	20,021
Sub-Sub-total			114,209			122,171			130,692			139,806
*Card Reproduction												
Material cost, 6-up sheets	30,692	0.026	798	31,920	0.026	830	33,196	0.026	863	34,524	0.026	898
Mach.cost Xerox (per ed)	176,274	0.015	2,644	183,325	0.015	2,750	190,658	0.015	2,860	198,284	0.015	2,974
Xerox labor @ $2/hour	176,274	0.001	181	183,325	0.001	194	190,658	0.001	207	198,284	0.001	222
Type cards, labor	202,983	0.130	26,402	211,102	0.134	28,250	219,546	0.138	30,228	228,328	0.142	32,344
Xerox cards, labor	30,258	0.130	3,945	31,468	0.134	4,221	32,727	0.138	4,517	34,036	0.142	4,833
Sub-Sub-total			33,970			36,245			38,675			41,271
*Book Preparations												
Monographs	20,441	0.153	3,137	20,441	0.164	3,357	21,259	0.169	3,592	22,109	0.174	3,843
Bound serials	9,307	0.153	1,428	9,307	0.164	1,528	9,679	0.169	1,635	10,066	0.174	1,749
Other	3,000	0.153	460	3,000	0.164	492	3,120	0.169	526	3,245	0.174	563
Sub-Sub-total			5,025			5,377			5,753			6,155
*Catalog Edit												
Filing, editing, revising	166,617	0.127	21,140	170,000	0.133	22,620	176,800	0.137	24,203	183,872	0.141	25,897
Sub-Sub-total			21,140			22,620			24,203			25,897
Sub-total			174,344			186,413			199,323			213,129

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